Installation and Operating Manual

The “smart meter”

PTK 50-3 and PTW 50

Fig. 1: iXmeter package PTK 50-3 and PTW 50

EN Installation Instructions iXmeter

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2. Manufacturer details

iXmeter@work™

PTK 50-3 and PTW 50

Installation and Operating Instructions

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Manufacturer:

ElectronXx GmbH

Haberstrasse 46

42551 Velbert

Germany

Tel.: +49 (0) 2051 60721 0
Fax: +49 (0) 2051 60721 65

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3. Safety instructions (always read before use!!)

The device must not be opened, otherwise operational reliability is not ensured.

WARNING
During operation of electrical equipment hazardous live voltage may be present in specific parts of the equipment. Failure to observe warning notices, incorrect or improper use may lead to personal injury and/or material damage.
Before working in the terminal strip area, disconnect the device from the power supply. If you use stranded conductors, you have to employ wire end ferrules.

Flawless and safe operation of this device requires proper transport, storage, installation, assembly and commissioning as well as careful use, maintenance and servicing.

For this reason only qualified personnel may work on and operate this device.

Qualified personnel refers to persons who
- are familiar with installation, assembly, commissioning and operation of the device and the system to which it is connected,
- are able to perform switching operations in accordance with safety engineering standards and are authorized to energize and de-energize equipment as well as to isolate, ground and label it,
- are trained in the care and use of safety apparatus in accordance with safety engineering standards
- and are trained in emergency procedures (first aid).

Whenever it is likely that safe operation is no longer possible, shut down the device and secure it to prevent unintentional operation.

IMPORTANT!
The operating manual for this device provides instructions for its installation, commissioning and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics.
In the event of questions or specific problems, do not take any action on your own without proper authorization. Contact the appropriate ElectronXx GmbH technical sales office and request the necessary information.
Any agreements, commitments and legal relationships as well as any obligations on the part of ElectronXx GmbH, including settlement of warranties, shall result solely from the applicable purchase contract, which is not affected by the contents of the operating manual.

4. Description

The devices are designed for installation in racks or control panels in accordance with DIN EN 61010-1/08.2002 (IEC 61010-1:2001).
AC power measuring transducers of the “Power 50 Series" and the iXmeter@work convert AC currents and/or AC voltages into analog standard signals according to the technical data.

The inputs of these devices generally conform with overvoltage category III, degree of contamination 2.

The outputs are fundamentally functional extra-low voltage circuits (PELV) and meet the requirements for safe isolation against all inputs.

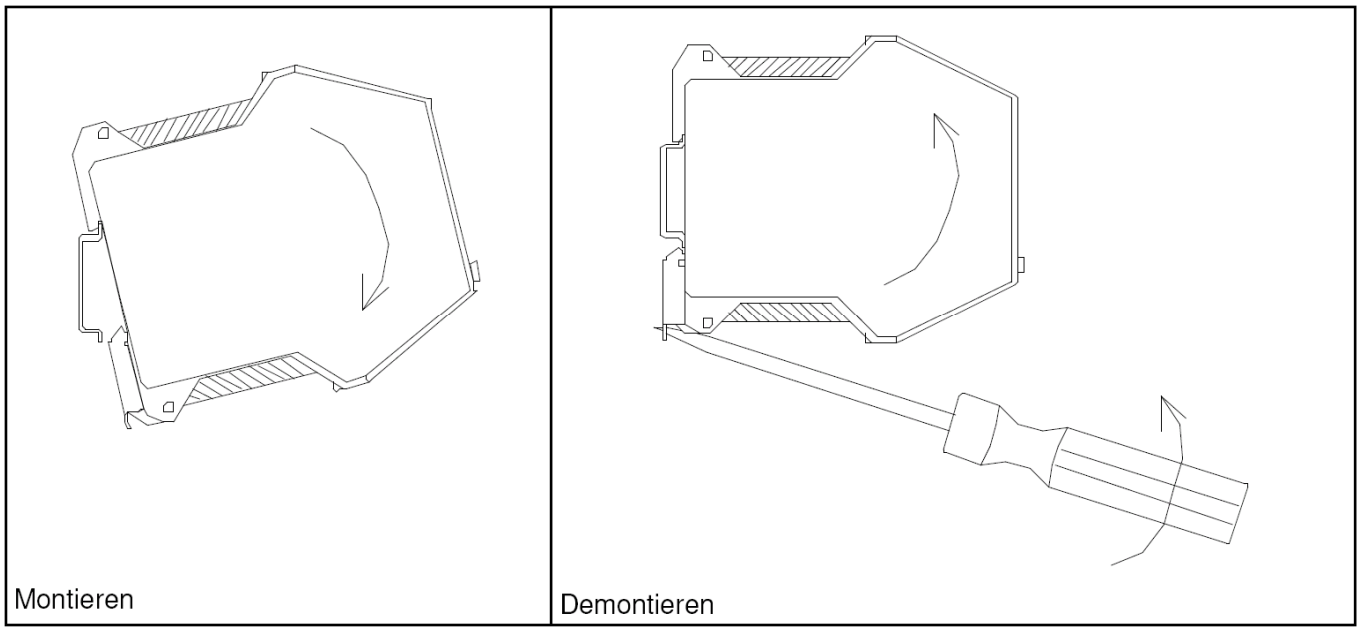
PTK50-3

These power measuring transducers require an additional power supply. The root-mean-square value is formed from the input variables. As a result, even non-sinusoidal input signals are converted into proportional root-mean-square values. The analog output is bipolar so, for example, power flow directions can also be identified via the sign. “Live zero” signals are possible, the output characteristic curve can also be selected as non-linear.
The PTK50-3 power measuring transducer has 2 additional digital outputs (open collector).
These measuring transducers are freely parameterizable.
You will find further information in the separate parameterization manual.
These power measuring transducers can optionally be equipped with a bus connection as well.
You will find further information in the separate interface manual.

PTW 50

The PTW 50 is a WEB Server that collects the data of the PTK 50.
It is connected to the PTK via the LCI interface at the front.
The measured electrical values are read out of the PTK 50 at one-second intervals and stored in the PTW 50 tables.
With a WEB browser you can display the data.

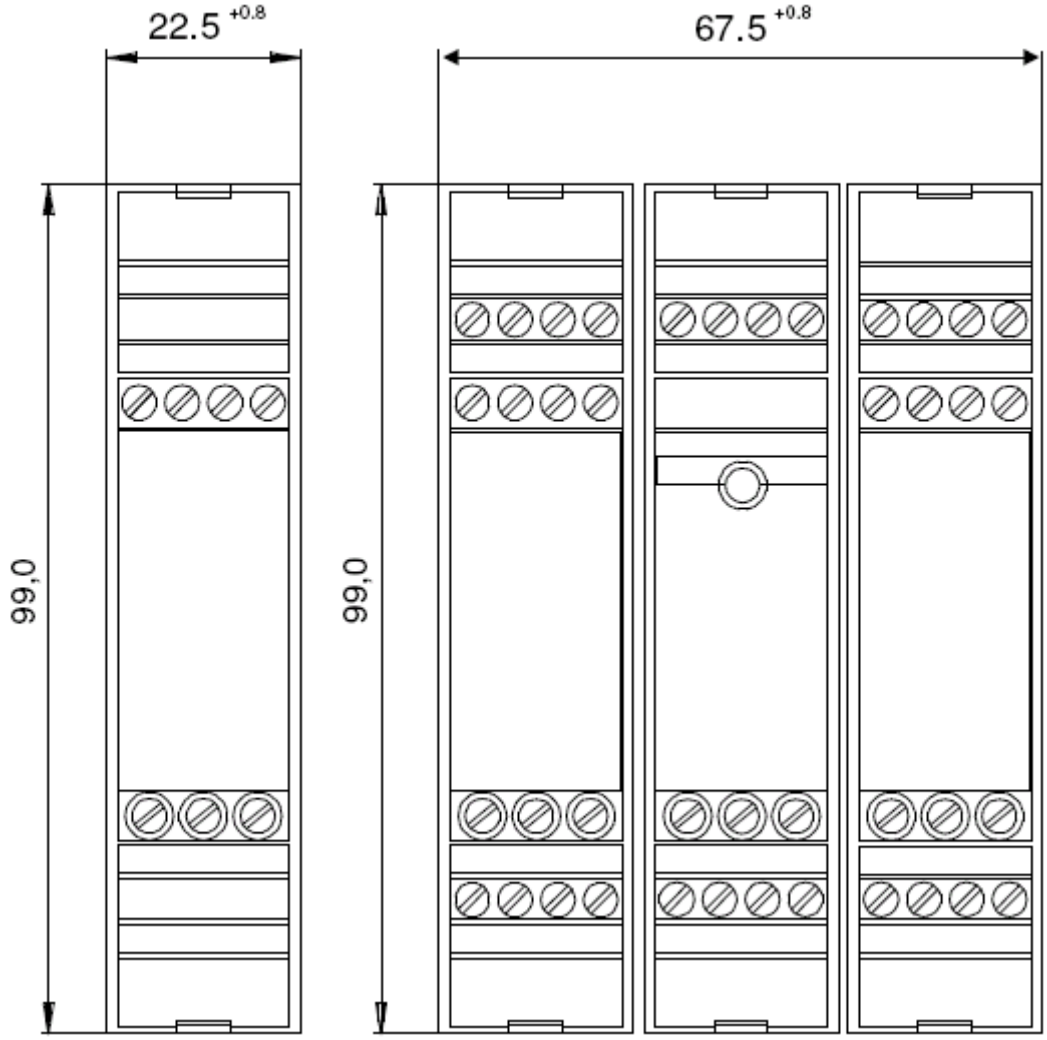
5. Mounting



[Legende: Mounting, Dismantling]
Fig. 2:
Top-hat rail case on top-hat rail 35 mm ×15 mm or 35 mm × 7.5 mm
(DIN EN 60 715/09.2001)

6. Dimensional drawings

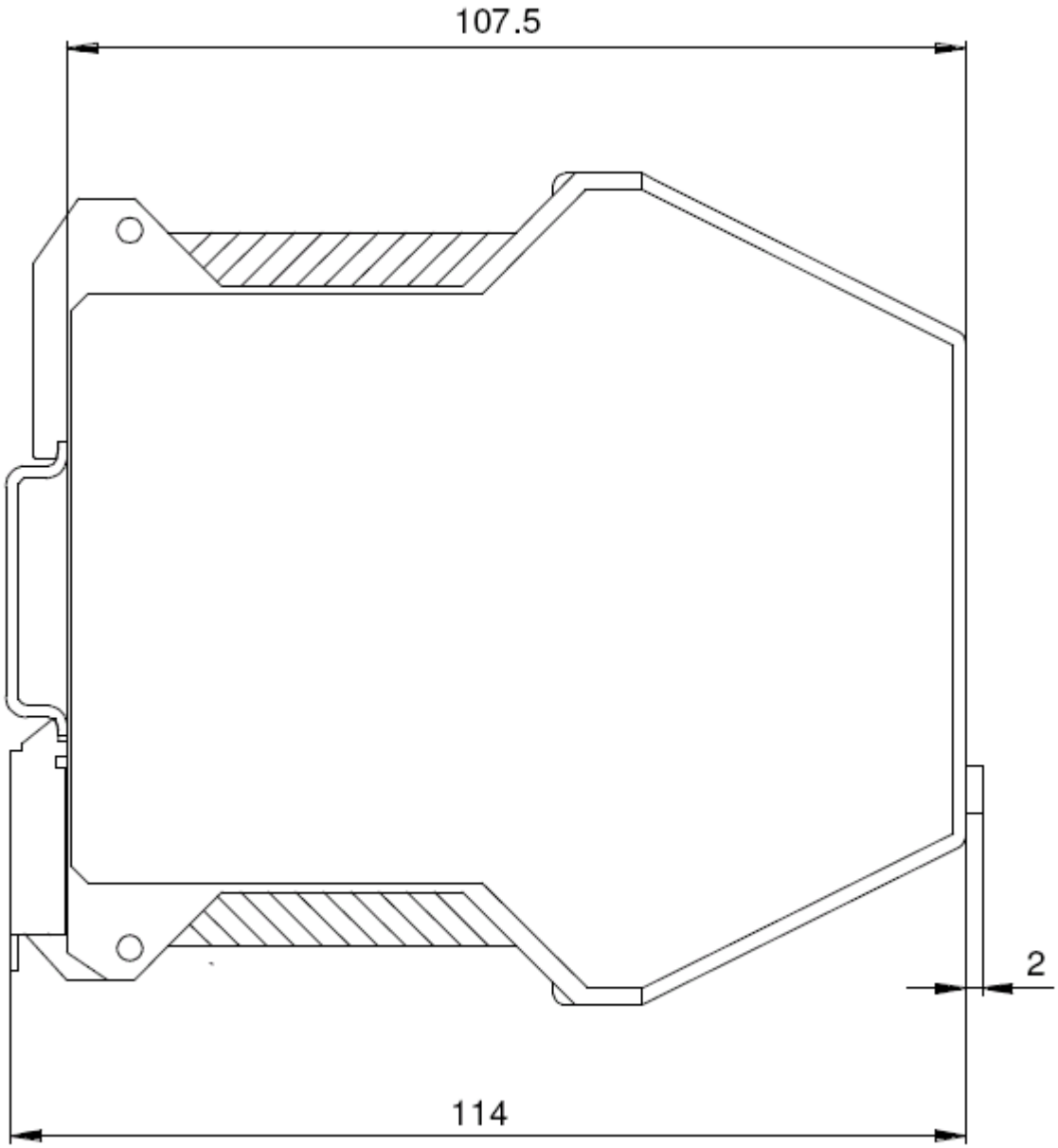
Front view



PTW 50 PTK 50-3

[Anmerkung des Übersetzers: Zahlen in Englisch werden mit Punkt als Dezimalstelle geschrieben, z.B. 99.0 (deutsche Schreibweise: 99,0)]

Side view



7. Connection and commissioning

WARNING
Observe the customary national regulations concerning the installation of power systems and equipment up to 1000 V when selecting conductor material and during installation.
In the case of devices with external power supply, you have to provide a switch and a fuse (16 A) in the immediate vicinity to enable disconnection of all poles.
The input/power supply and output lines should be routed separately.
Before switching on the unit, ensure that the device data correspond to the connection data.
For customer-specific parameterization the data indicated on the rating place must conform with the parameterized data. You may have to make changes to the rating plate sections concerned.
Refer to the rating place and the connection diagrams for terminal assignment.
Deviations may lead to errors as well as personal injury and material damage.

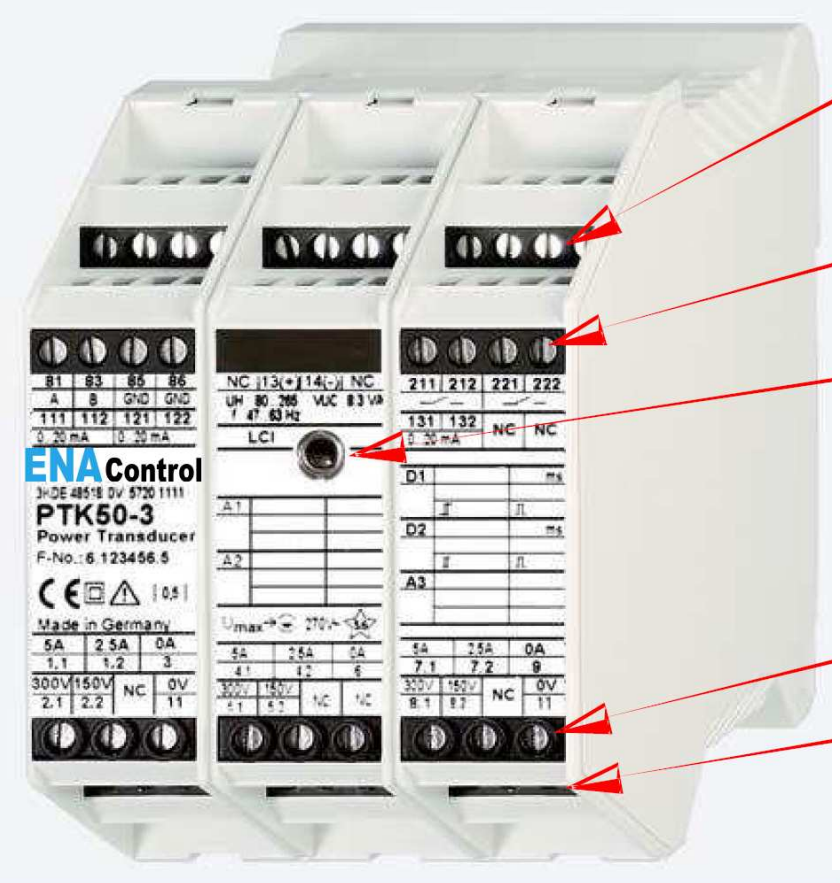


Fig. 3: PTK 50-3, terminals

Power supply
13 L / + / ~
14 N / - / ~

ATTENTION!
In the case of power supply with alternating current, ensure that the phase is connected to terminal 13, otherwise the measured values may fluctuate.

Current	Voltage	Output	Binary
1.1: L1, input 1	2.1 L1, input 1	111 output 1	211 output 1
1.2: L1, input 2	2.2 L1, input 2	112 output 1+	212 output 1+
3: L1, output		121 output 2	221 output 2
	5.1 L2, input 1	122 output 2+	222 output 2+
4.1: L2, input 1	5.2 L2, input 2	131 output 3	
4.2: L2, input 2		132 output 3+	
6: L2, output	8.1 L3, input 1		
	8.2 L3, input 2		
7.1: L3, input 1			
7.2: L3, input 2	11 Neutral point		
9: L3, output			

RS 485 (optional)
81: RXD/TXD A+
83: RXD
85: GND
86: GND

The loads applied to connecting circuits have to remain within the limits indicated in the technical data. In addition, the following voltage limits must not be exceeded:

Voltage:

Phase, input 2.2 to terminal 11	≤ 300 volts
Phase, input 2.1 to terminal 11	≤ 600 volts
Phase to phase (PTK50-3)	≤ 1000 volts

PTK50-3
- Rated voltage 75 to 150V / 150 to 300V = 270 volts (to ground)
- Rated voltage 150 to 300V / 300 to 600 V = 570 volts (to ground)

Cable cross-sections

Current terminals	4.0 mm² fine wire	6.0 mm² single wire
all other terminals	2.5 mm² fine wire	2.5 mm² single wire

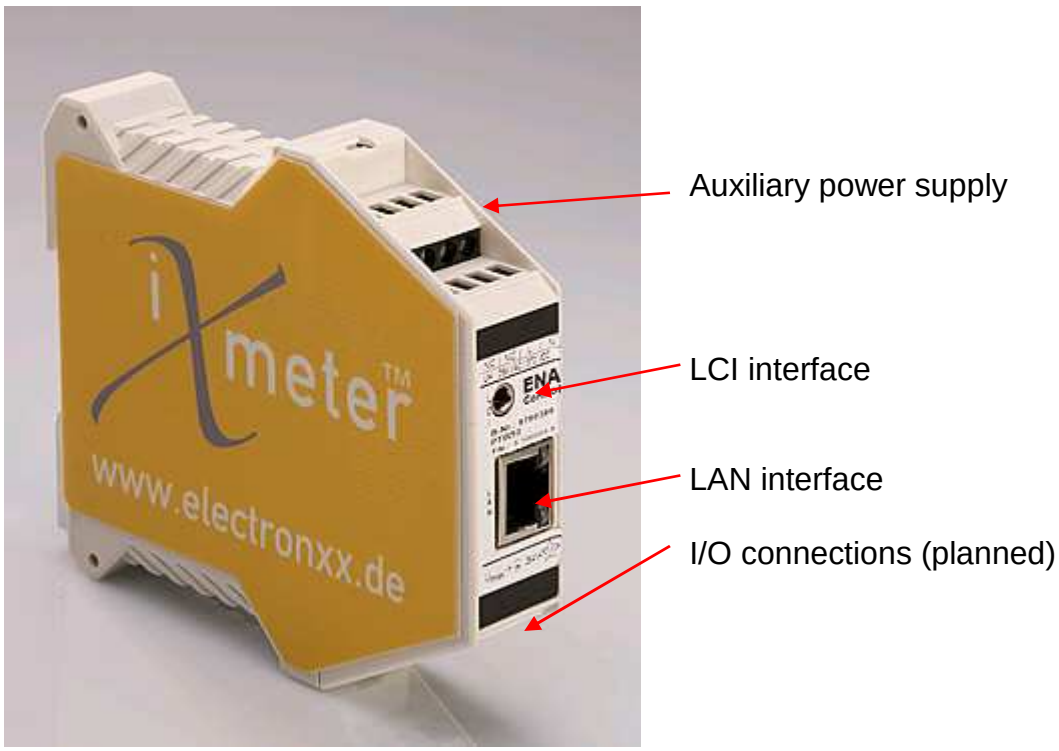


Fig. 4: PTW 50, terminals

Power supply:
Terminal L: phase L in case of AC voltage or plus + in case of DC voltage
Terminal N: neutral conductor in case of AC voltage or ground – in case of DC voltage

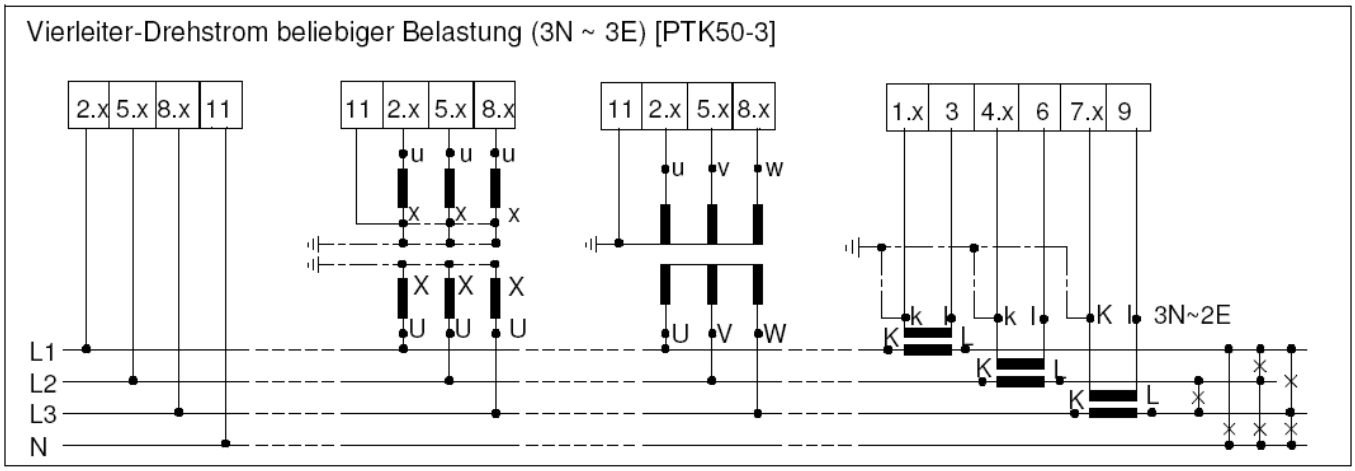
90-264 VAC or 120-370 VDC

Cable cross-sections

Terminals (auxiliary power and I/Os)	2.5 mm² fine wire	2.5 mm² single wire
LCI cable 0.5 m	2 x 3.5 mm jack plug	
LAN interface	RJ45	

8. Terminal diagrams

Energy consumption is considered to be a positive energy direction.
Currents and voltages not physically connected are not displayed.



Attention!
The delta voltage terminals must be assigned in the same way as if star voltage were connected (an artificial neutral point is created internally in the measuring transducer).
Example:
You have a delta voltage of 400 V and thus a star voltage of 230 V. The terminals must then be assigned as follows:

Terminal label 300/150 V:
terminals 2.1, 5.1 and 8.1 for L1, L2 and L3

Terminal label 600/300 V:
terminals 2.2, 5.2 and 8.2 for L1, L2 and L3.

Legende:
4-wire 3-phase unbalanced load

The maximum connection signals of the PTK 50-3 are 600 V AC and 5 A.
In the case of greater voltage or current, you have to connect appropriate voltage and/or current transformers on the line side. The input parameters are freely configurable with the Process Data Manager.

The LCI interface is bridged between the PTK 50-3 and the PTW 50 using the jack plug cable provided.

9. Technical data

PTK 50-3

Product standard	DIN EN 60 688 (April 2002) IEC 60 688/A2:2001

Current input

Nominal value	see rating plate of device
Power consumption per phase	≤ 0.15 VA
Overload capacity	2 x I_{nom} *)
Overload capacity for 1s	40 x I_{nom}; max. 200 A *)

*) at nominal conditions

Voltage input

Nominal value	see rating plate of device
Power consumption per phase	≤ 1mA. U_{nom}
Overload capacity, permanent **)	1.5 x U_{nom}
Overload capacity for 1s	4 x U_{nom}

**) Note: observe max. permissible voltage!

Power supply PTK 50-3
(acc. to rating place data)

80…300 V DC / 80…265 V AC (45-65 Hz)
19…100 V DC / 19…72 V AV (45-65 Hz)

high voltage	low voltage
4.5 W / 6.3 VA	4.8 W / 8.3 VA

EMC and RFI in accordance with DIN EN 61 326-1/A1/IEC 61 326-1/A1 class B
(for industrial and residential areas)

CE Complies with EMC Directive 89/336/EEC and
Low Voltage Directive 73/23 EEC

Degree of protection: enclosure / terminals	IP40 / IP 20
Ambient temperature range	3K5 -20…...+60 ℃
Storage temperature	2K4 -40…...+80 ℃
Output circuit	see rating plate of device
Error limit	0.3%
Absolute measuring error	0.2% of nominal input value + 20 µA
Setting time	0.4 s

The output of programmable measuring transducers cannot be parameterized as a voltage output. An external resistor can be installed on the output terminals to obtain a voltage signal. The resistor value is calculated according to the following formula:
Resistance (Ω) = [desired output voltage (V)] / [output current (mA)]

To minimize the measuring error, the output current should be as high as possible.
For further data see rating plates and data sheet ENA3KDE485000R1003 for these products.

PTW 50

Product standard	DIN EN 60 688 (April 2002) IEC 60 688/A2:2001
Power supply	
Voltage supply	90…264V AC (45-65 Hz) 120…370 V DC
Power consumption	≤3.5 W / 5 VA
Communication	
PTK 50-3 ↔ PTW 50	RS232 via LCI
PTW 50 ↔ external	Ethernet
Protocols	
internal	MODBUS to PTK 50-3
external	HTTP TCP/IP FTP Telnet DHCP SNMP (planned) SMTP (planned) SSL/SSH (planned) BacNet (planned) M-Bus (planned)
Enclosure (WxHxT) [mm]	22.5x114x100
Degree of protection: enclosure / terminal	IP 40 / IP 20
Terminals	2.5 mm² fine wire/single wire
Ambient temperature	3K5 -20…+60 ℃ 2K4 -40…+80 ℃

EMC and RFI in accordance with DIN EN 61 326-1/A1/IEC 61 326-1/A1

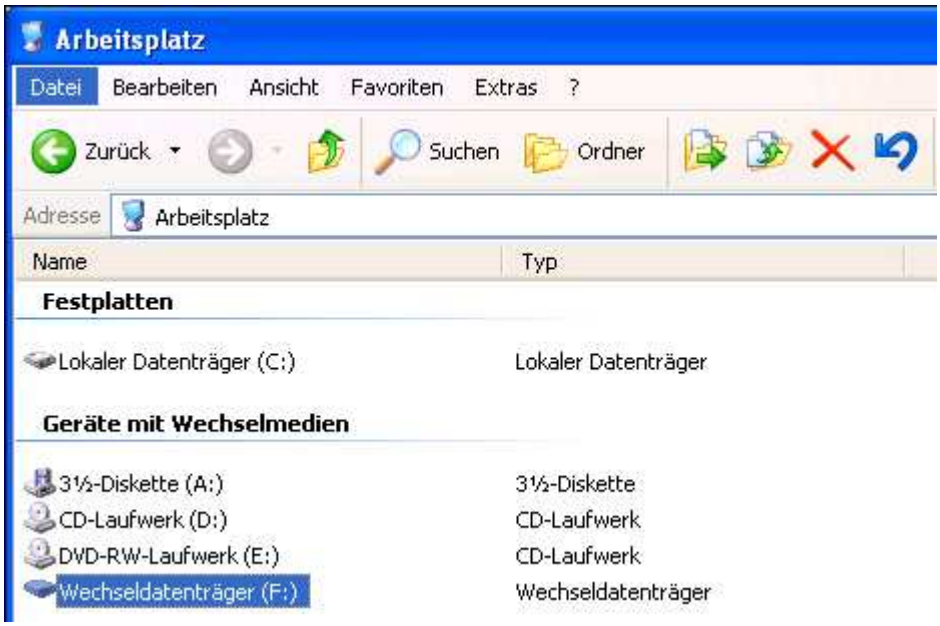
CE

Complies with EMC Directive 89/336/EEC and
Low Voltage Directive 73/23 EEC

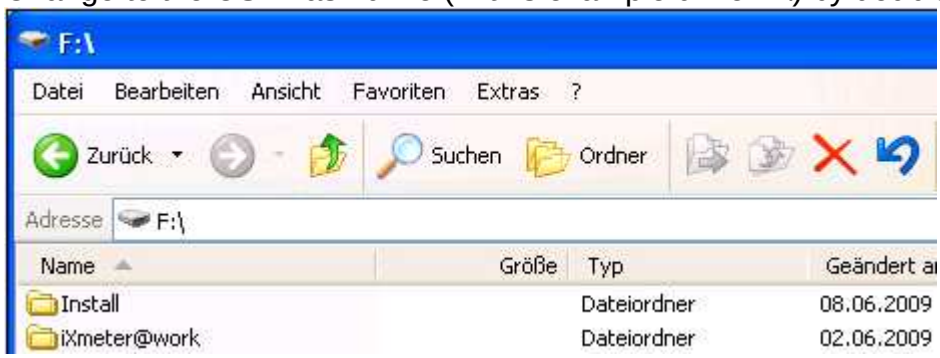
10. Installation of the software (Windows)

DeviceInstaller 4.2

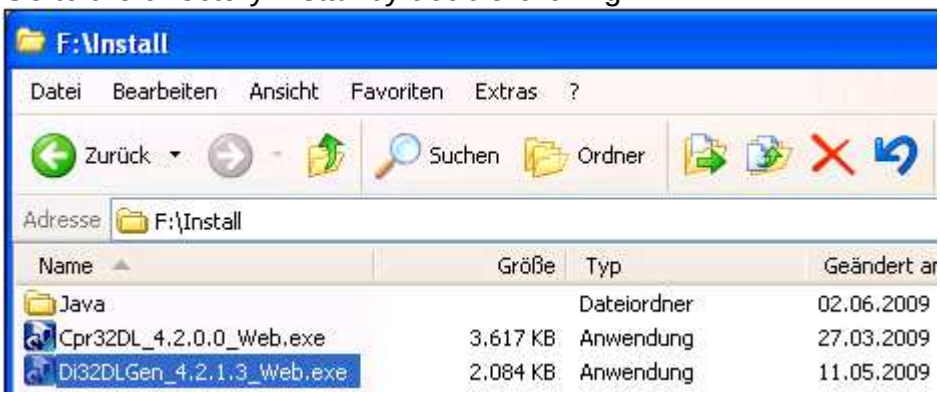
Insert the USB flash drive provided into an available USB port of your PC.
Open the File Explorer (Desktop):



Change to the USB flash drive (in this example drive F:\) by double-clicking.



Go to the directory Install by double-clicking.



Start the DeviceInstaller by double-clicking on the file:
Di32DLGen_4.2.1.3_WEB.exe

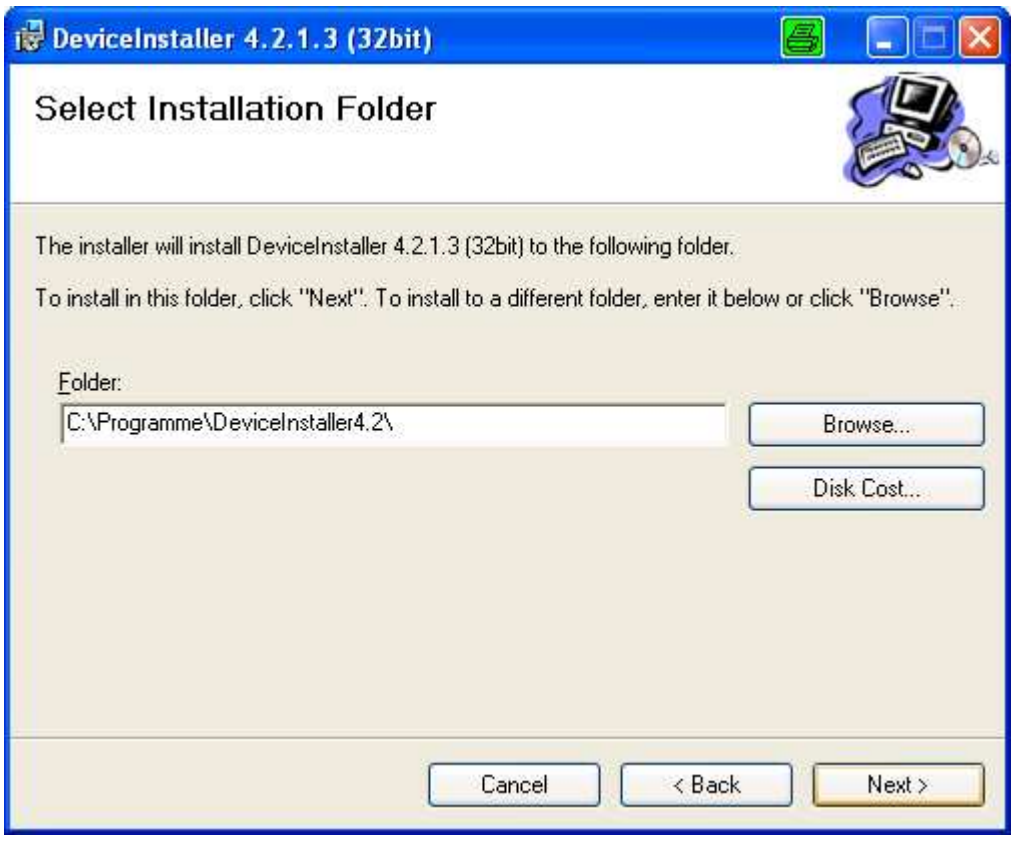
The installation then starts.
Select the directory in which the installation routine of the DeviceInstaller should be installed and confirm with Next >

DeviceInstaller 4.2 - InstallShield Wizard
Location to Save Files
Where would you like to save your files?
Please enter the folder where you want these files saved. If the folder does not exist, it will be created for you. To continue, click Next.
Save files in folder:
C:\Programme\DeviceInstaller4.2\Install
Change...
InstallShield
< Back
Next >
Cancel

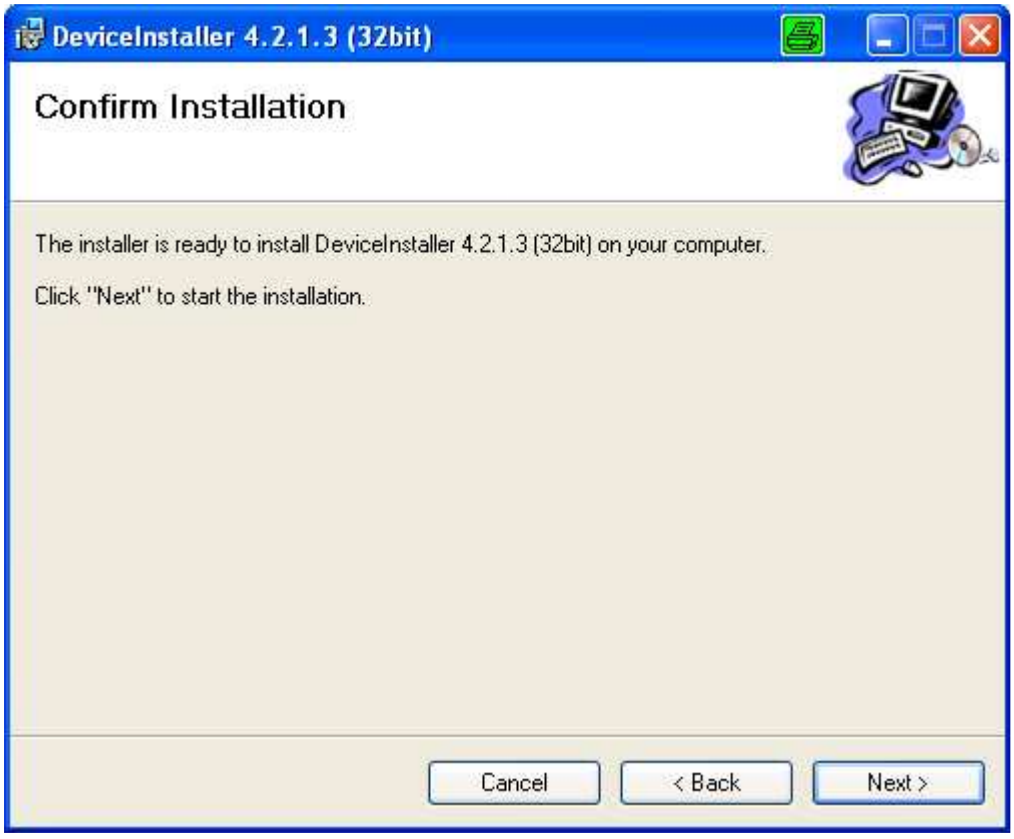
Confirm the welcome dialog with Next >

DeviceInstaller 4.2.1.3 (32bit)
Welcome to the DeviceInstaller 4.2.1.3 (32bit) Setup Wizard
The installer will guide you through the steps required to install DeviceInstaller 4.2.1.3 (32bit) on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

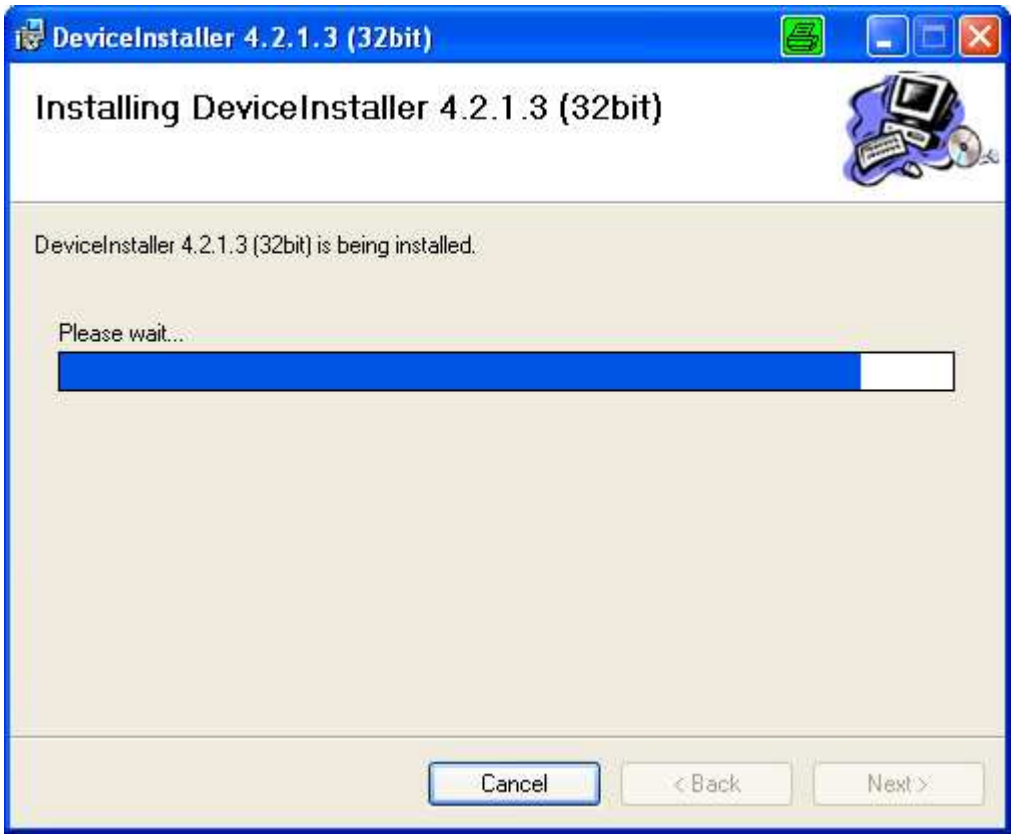
Confirm the installation path for the DeviceInstaller with Next >


DeviceInstaller 4.2.1.3 (32bit)
Select Installation Folder
The installer will install DeviceInstaller 4.2.1.3 (32bit) to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Programme\DeviceInstaller4.2\
Browse...
Disk Cost...
Cancel
< Back
Next >

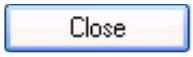
Now confirm the installation with Next >

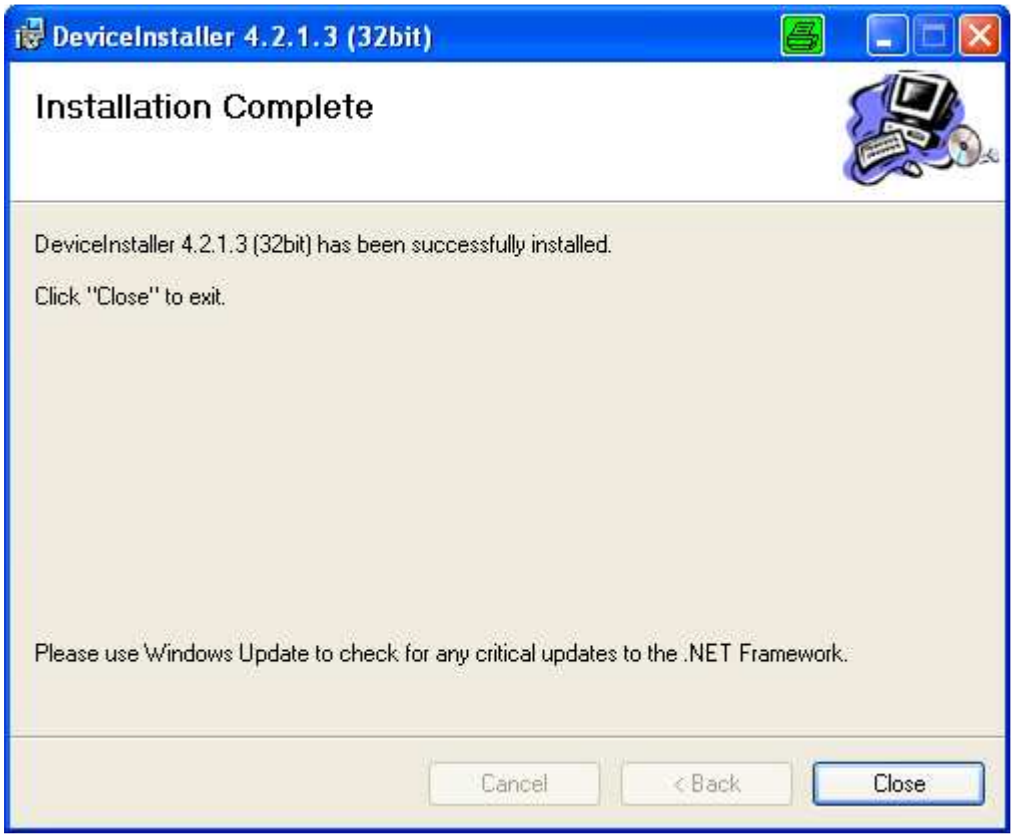

DeviceInstaller 4.2.1.3 (32bit)
Confirm Installation
The installer is ready to install DeviceInstaller 4.2.1.3 (32bit) on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

The installation is then carried out. Please wait ….

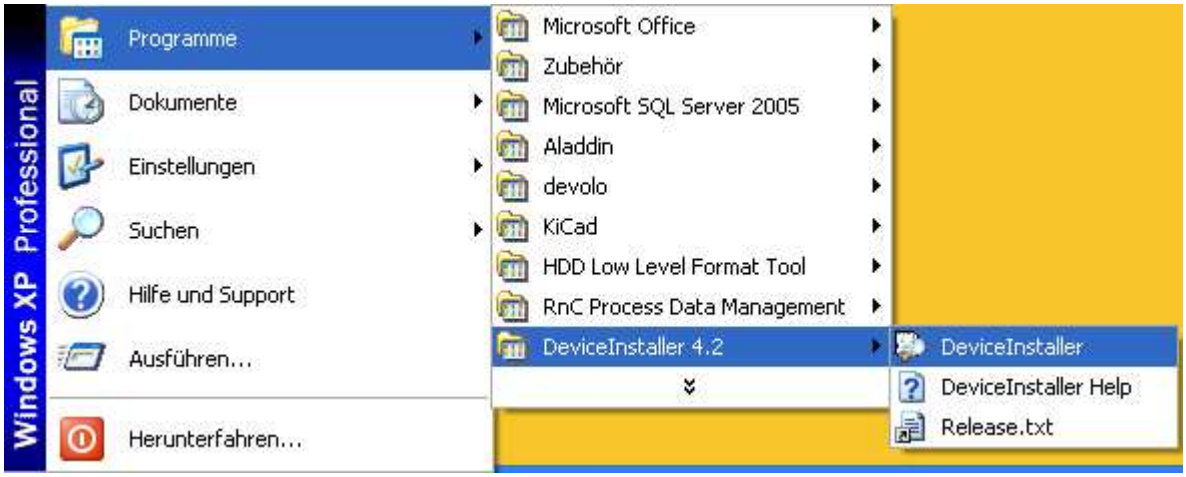


The installation is complete. Please close the dialog with




DeviceInstaller 4.2.1.3 (32bit)
Installation Complete
DeviceInstaller 4.2.1.3 (32bit) has been successfully installed.
Click "Close" to exit.
Please use Windows Update to check for any critical updates to the .NET Framework.
Cancel
< Back
Close

The DeviceInstaller is now at your disposal.



You can use it to connect the PTW 50 to your network.

Java

Now we need Java version 1.6.0_13 or higher on your PC to operate the WEB pages. You will find the latest version on the Internet at:

http://de.sun.com

Save the current version on your USB flash drive.

Start the installation by double-clicking on the file jre-6u13-windows-i586-p-s.exe

Java Setup - Willkommen
Willkommen bei Java™ und JavaFX™
Java wird das Internet interessanter für Sie machen.
JavaFX erweitert die Leistung von Java und liefert Medien und Inhalte für virtuelle Umgebungen auf jedem Display.
Während des Installations- und Aktualisierungsprozesses werden einige nicht persönliche Informationen an Sun übermittelt, die uns helfen unsere Leistung zu verbessern. Weitere Einzelheiten - auch über das Deaktivieren dieser Informationsübermittlung - finden Sie unter http://java.com/data
Lizenzvereinbarung anzeigen ...
Sie müssen die Lizenzvereinbarung akzeptieren, indem Sie auf Annehmen klicken, um das Produkt herunterzuladen.
Java™
Sun JavaFX™
Zielordner ändern
Ablehnen
Annehmen >

Confirm your acceptance of the contract with
Java Setup - Fortschritt
Java wird installiert
Dies kann einige Minuten in Anspruch nehmen.
Java
Sun
Status:
Nutzen Sie jetzt ein Microsoft Office-kompatibles Office-Paket mit vollständigem Funktionsumfang – kostenlos!
• Leistungsfähige Sammlung integrierter Anwendungen für Textverarbeitung, Tabellenkalkulation, Präsentation, Zeichnen und Datenbanken
• Ermöglicht das Lesen, Bearbeiten und Speichern von Microsoft Office-Dateien
• Unterstützt über 70 Sprachen und Solaris-, Windows-, Linux- sowie Mac-Betriebssysteme
• Verwendet den Industriestandard für offene Dateiformate (OpenDocument) als Standarddateiformat
• Integrierter PDF-Export per Mausklick
Writer
Calc
Impress
Base
Draw
Math
OpenOffice.org

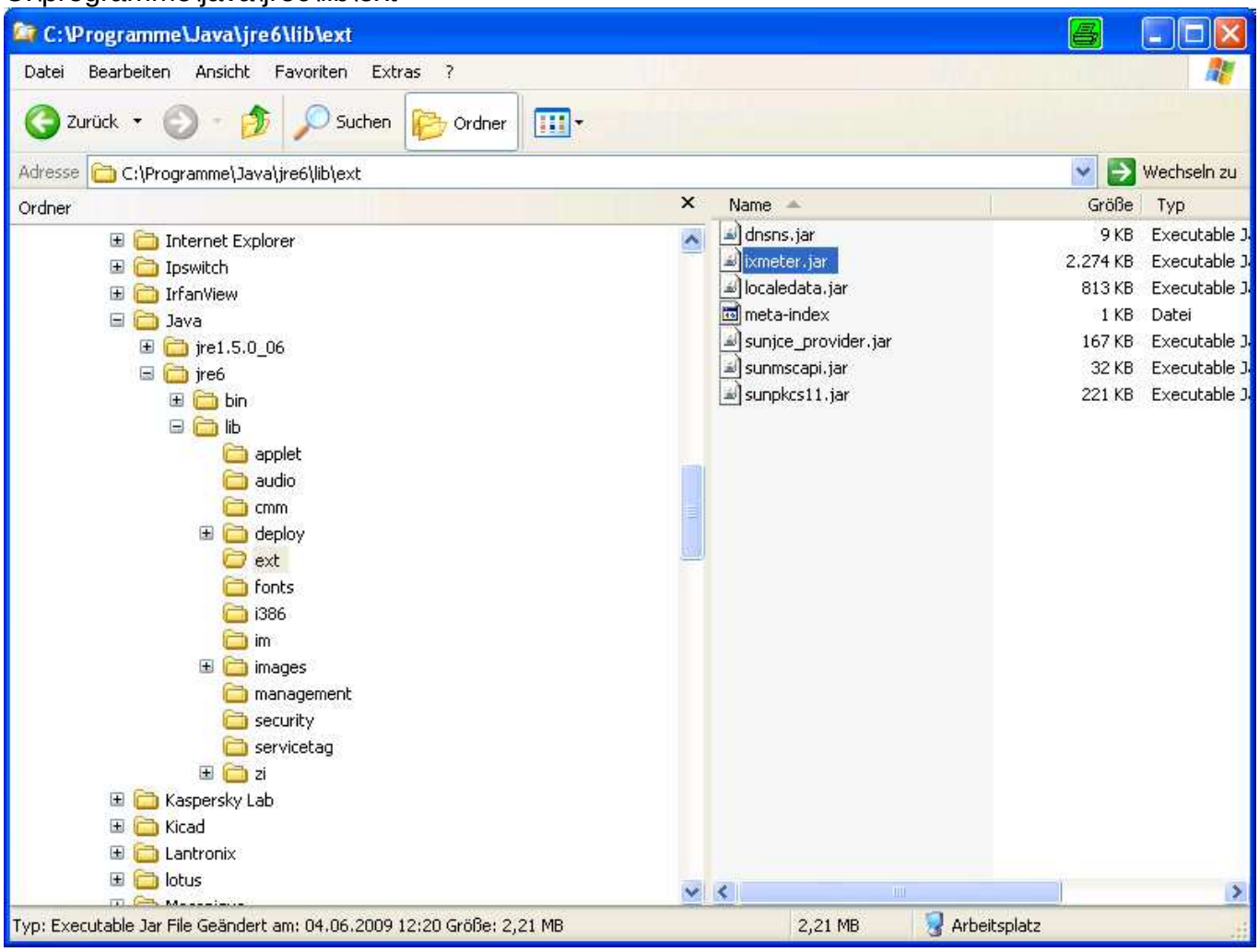
Java will now be installed. Please wait…

Java Setup - Vollständig
Sie haben Java™ erfolgreich installiert.
Das Internet auf Java-Basis steht Ihnen jetzt zur Verfügung. Wenn Sie wissen wollen, wie Java Ihnen helfen kann, besuchen Sie http://java.com
JavaFX-Laufzeitkomponente wird heruntergeladen, wenn Sie auf "Fertigstellen" klicken. Informationen über JavaFX und das Vornehmen von Änderungen finden Sie unter http://java.com/javafx
Java-Updates werden automatisch auf Ihren Computer heruntergeladen. Wenn Aktualisierungen zur Installation bereitstehen, erhalten Sie eine Nachricht. Wenn Sie diese Einstellung ändern möchten, besuchen Sie http://java.com/autoupdate
Java™
Sun JavaFX™
Fertigstellen

Confirm completion of the installation with

iXmeter.jar

Copy the file iXmeter.jar from your USB flash drive to the directory C:\programme\java\jre6\lib\ext



Your PC is then prepared for the iXmeter.

11. Installation of the PTW 50 in the network

Connect the Ethernet cable of your network to the PTW 50 and switch on the supply voltage. The LEDs on the front start to flash.

Top LED bi-colour, link

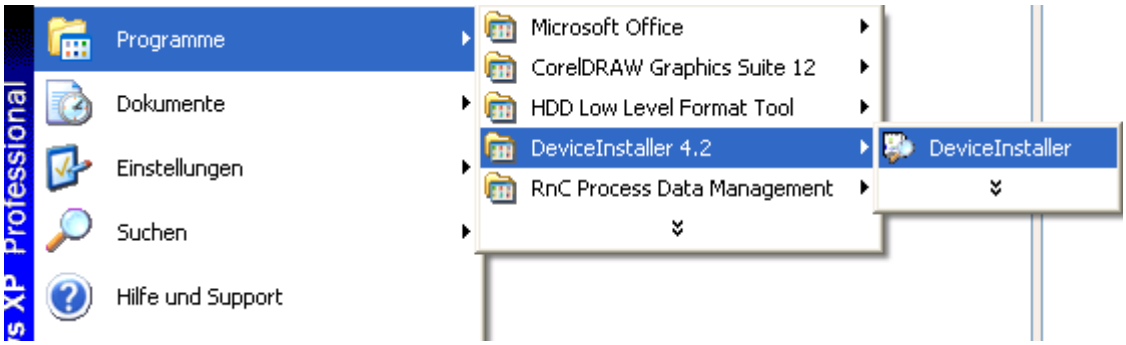
Colour	**Function**
Off	**not connected**
Yellow	**10 Mbps**
Green	**100 Mbps**

Bottom LED bi-colour, activity

Colour	**Function**
Off	**no activity**
Yellow	**half duplex**
Green	**full duplex**

The PTW is connected to the network.

Start the DeviceInstaller from the menu > Start, Programs, DeviceInstaller 4.2, DeviceInstaller



With DHCP server

After the start the XPort (iXmeter) is visible in the Explorer of the DeviceInstaller

Mark the entry with the IP address (the IP address may differ from this view)

On the right you will see the status page of the iXmeter.

Device Details | Web Configuration | Telnet Configuration

Reload Details

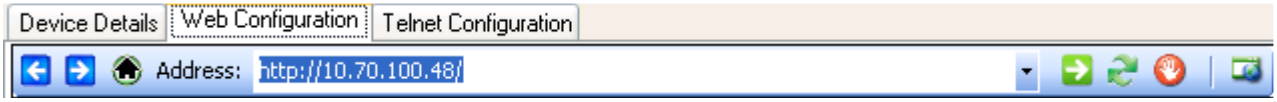
Property	Value
Name	
Group	
Comments	
Device Family	XPort
Type	XPort AR
ID	A1
Hardware Address	00-20-4A-94-6D-13
Firmware Version	3.2
Extended Firmware Version	3.2.0.1R7
Online Status	Online
IP Address	10.70.100.48
IP Address was Obtained	Dynamically
Obtain via DHCP	True
Obtain via BOOTP	False
Subnet Mask	Unable to retrieve from device
Gateway	0.0.0.0
Number of Ports	2
Supports Configurable Pins	True
Supports Email Triggers	True
Telnet Enabled	True
Telnet Port	23
Web Enabled	True
Web Port	80
Maximum Baud Rate Supported	230400
Firmware Upgradable	True

The iXmeter is online!

The iXmeter is parameterized for your application at the factory. You do not need to carry out any other settings.
In the following we show you the access to the iXmeter.

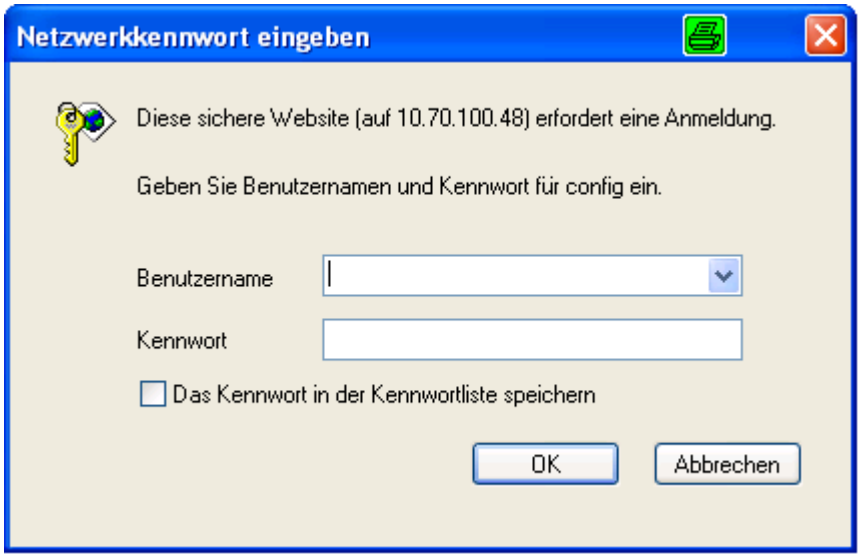
Attention!!!
It is not necessary to change the settings.
A change in the settings can only lead to a malfunction of the iXmeter!

Click on this tab in the right-hand window of the DeviceInstaller



In the address line you will find the IP address of the selected iXmeter.
Press the green arrow on the right

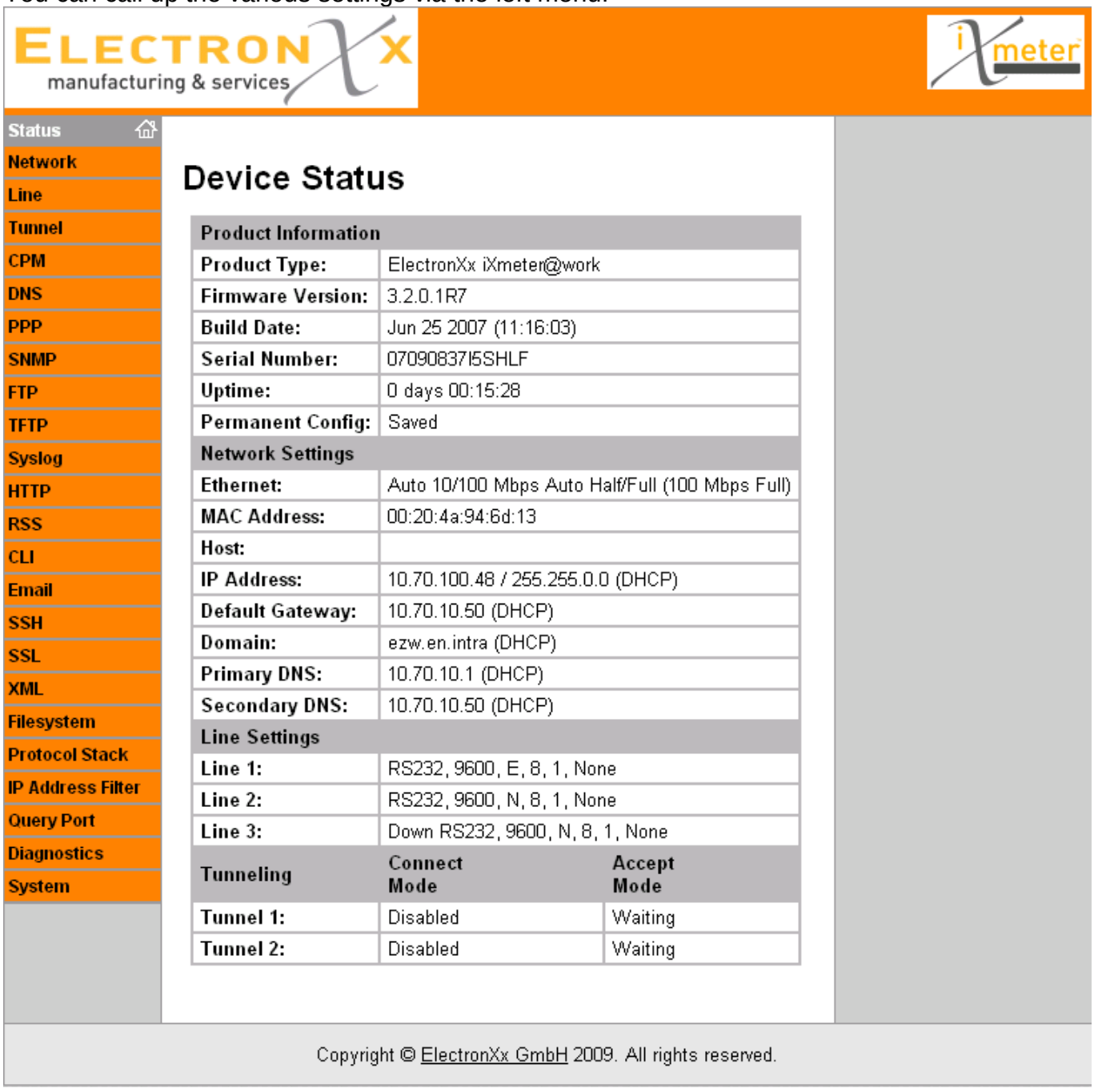
The login window opens.



Enter your user name and password:

User name: admin
Password: PASS

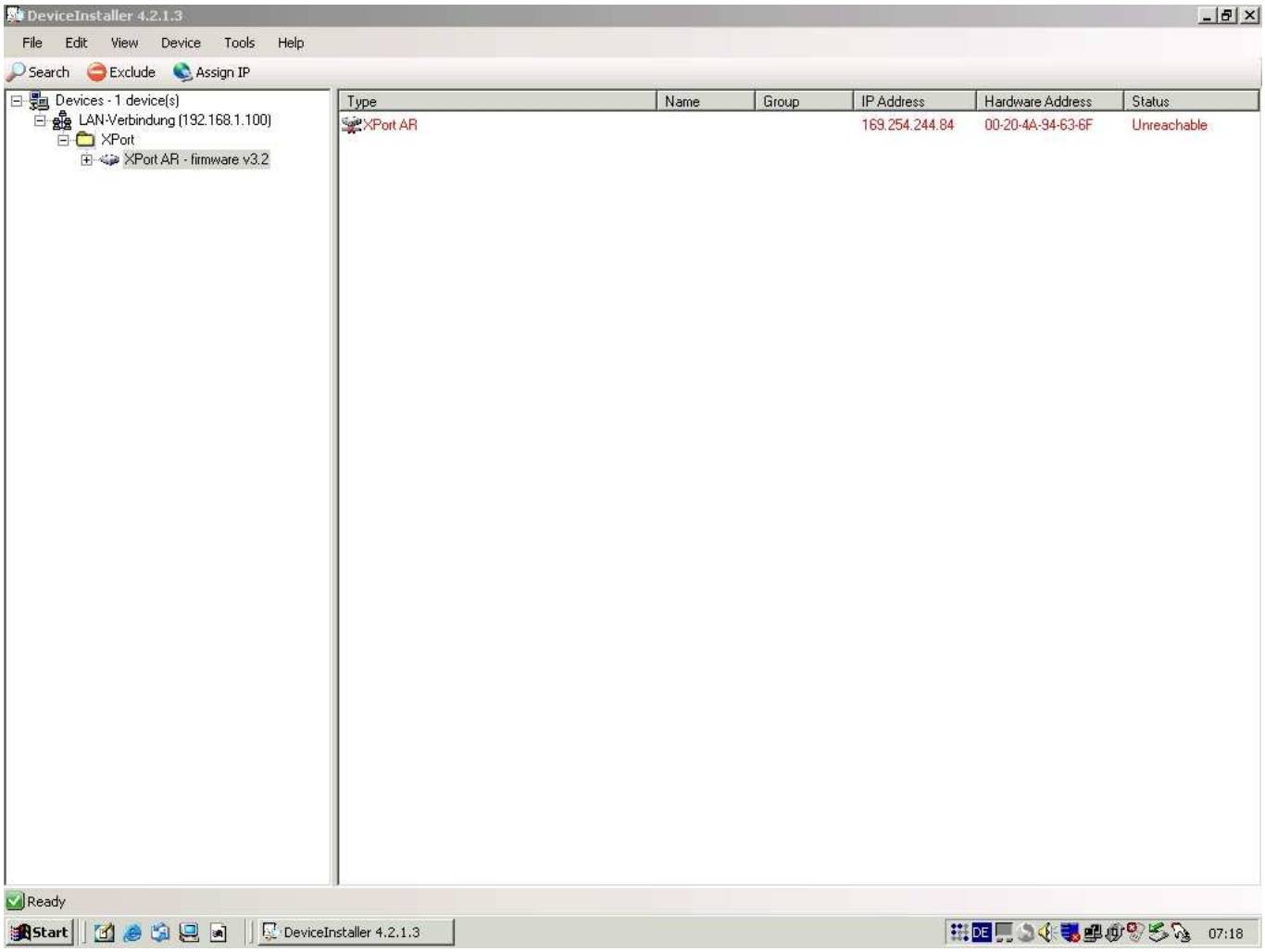
The status page of the iXmeter opens.
You can call up the various settings via the left menu.

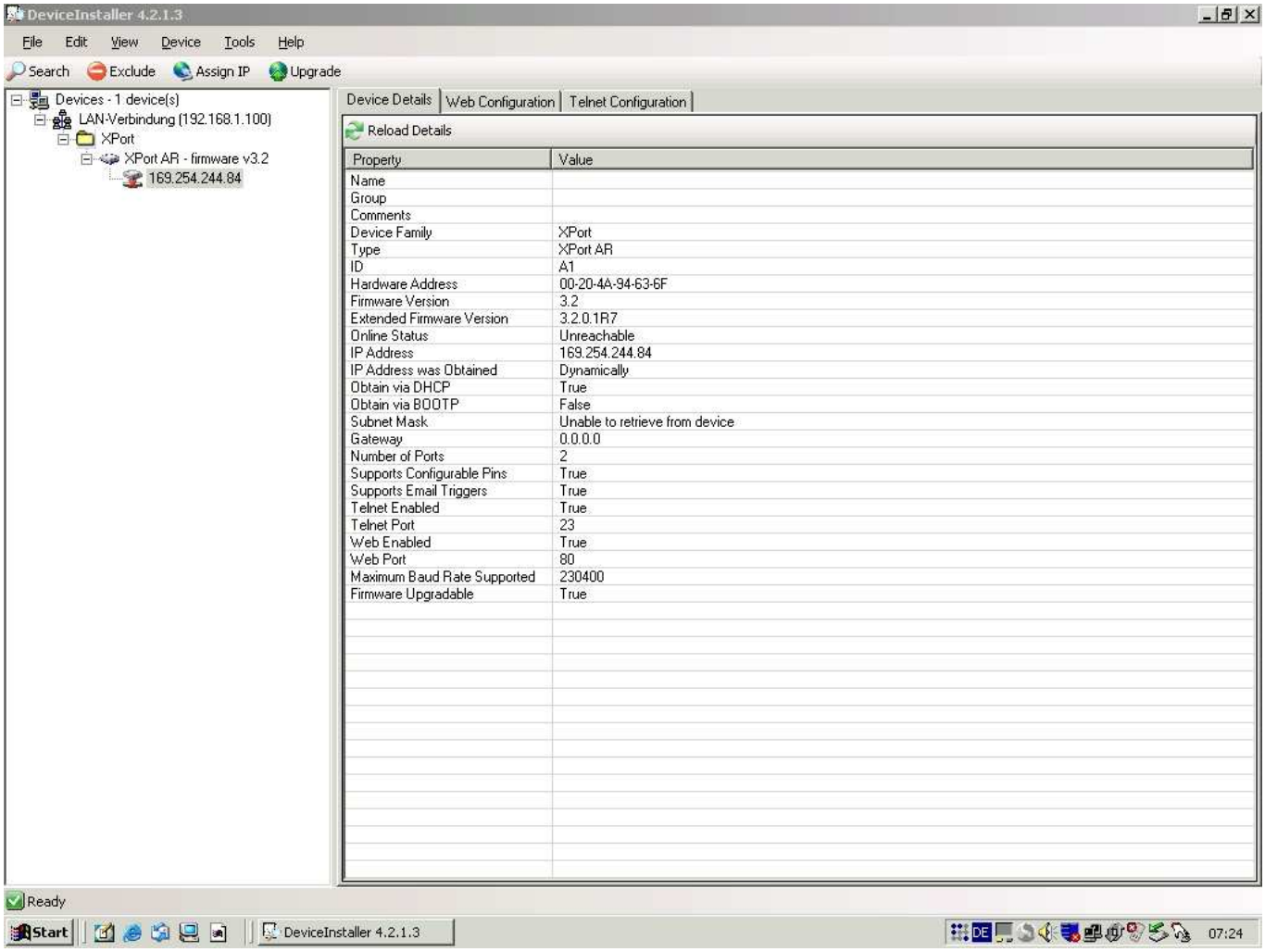


Without DHCP server

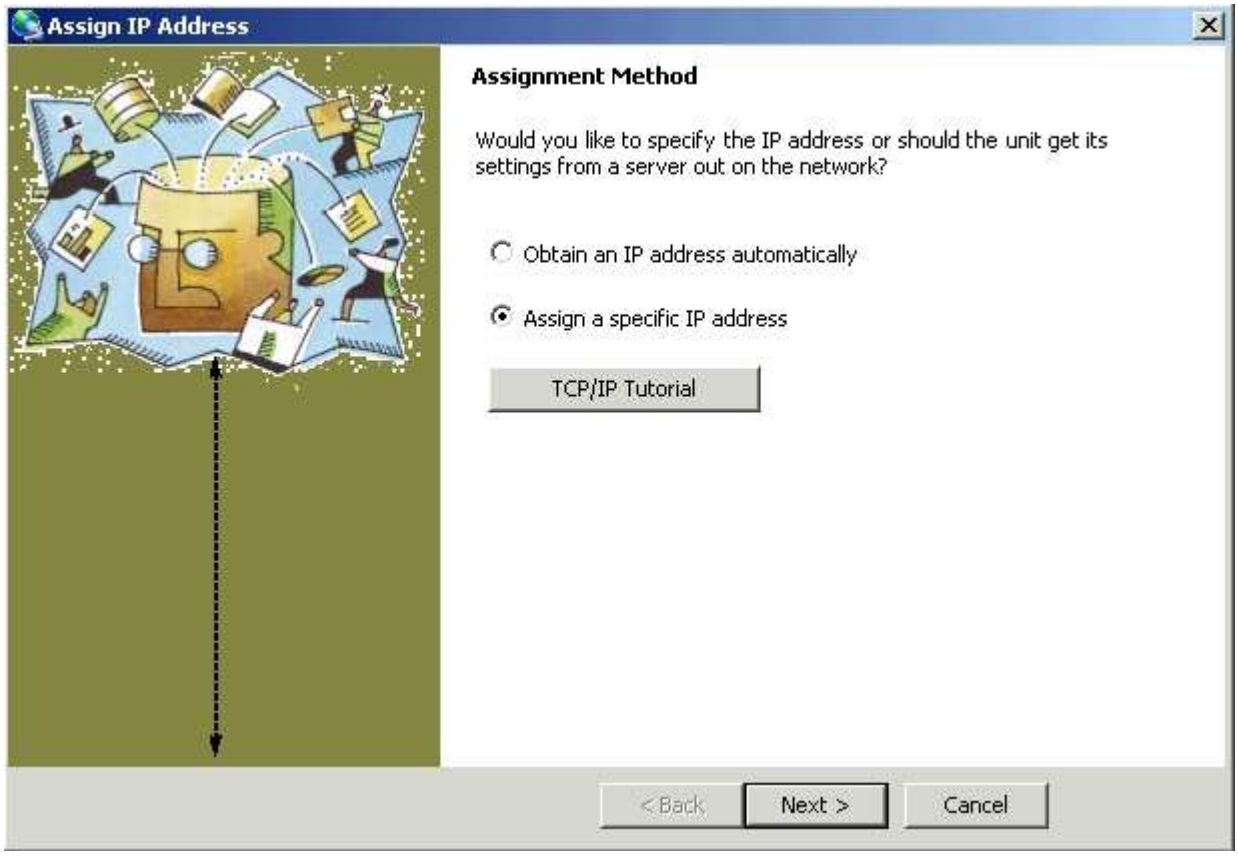
Start the DeviceInstaller.

If the iXmeter cannot reach a DHCP server, it automatically assigns an IP address that begins with 169.254. .
This address is visible in the DeviceInstaller.

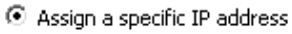




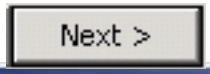
In the left window mark the IP address and press the button

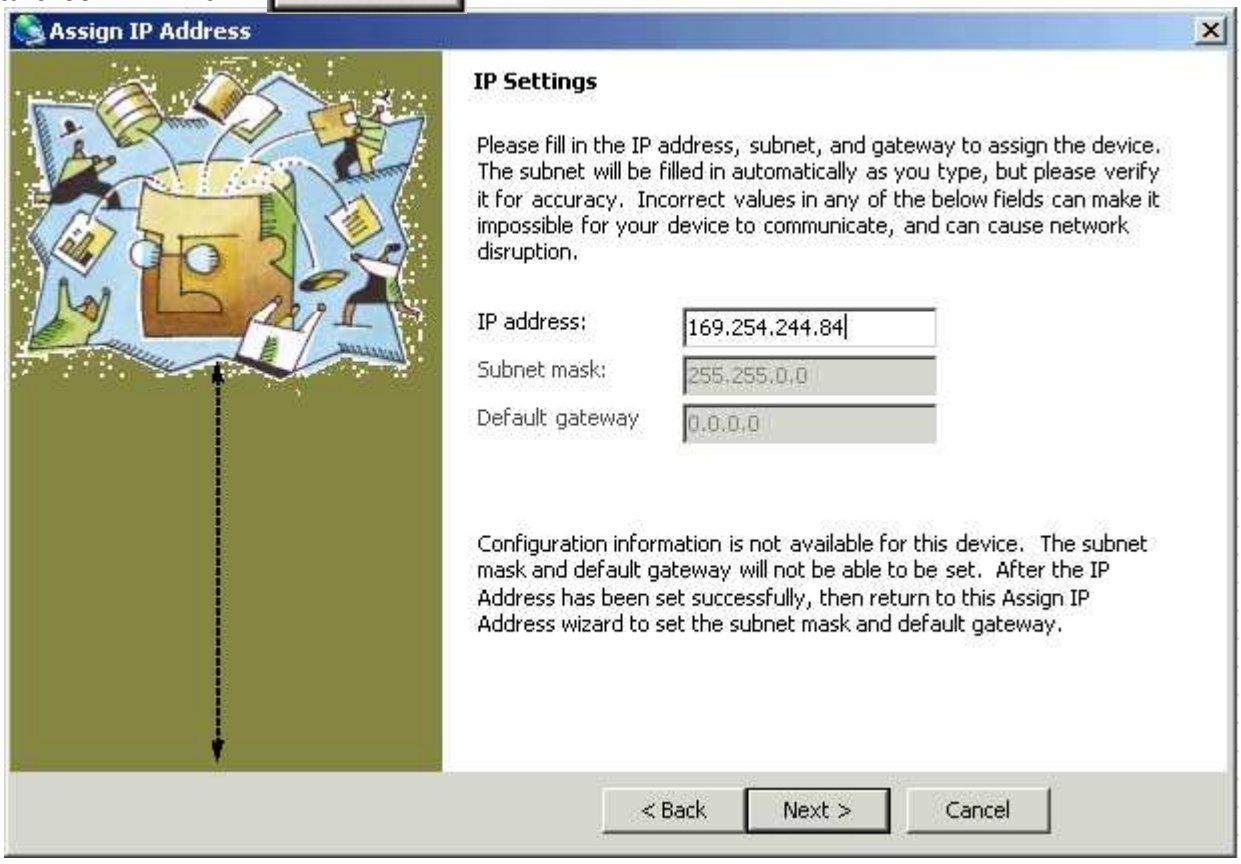

Assign IP Address
Assignment Method
Would you like to specify the IP address or should the unit get its settings from a server out on the network?
Obtain an IP address automatically
Assign a specific IP address
TCP/IP Tutorial
< Back
Next >
Cancel

In the following window select the option

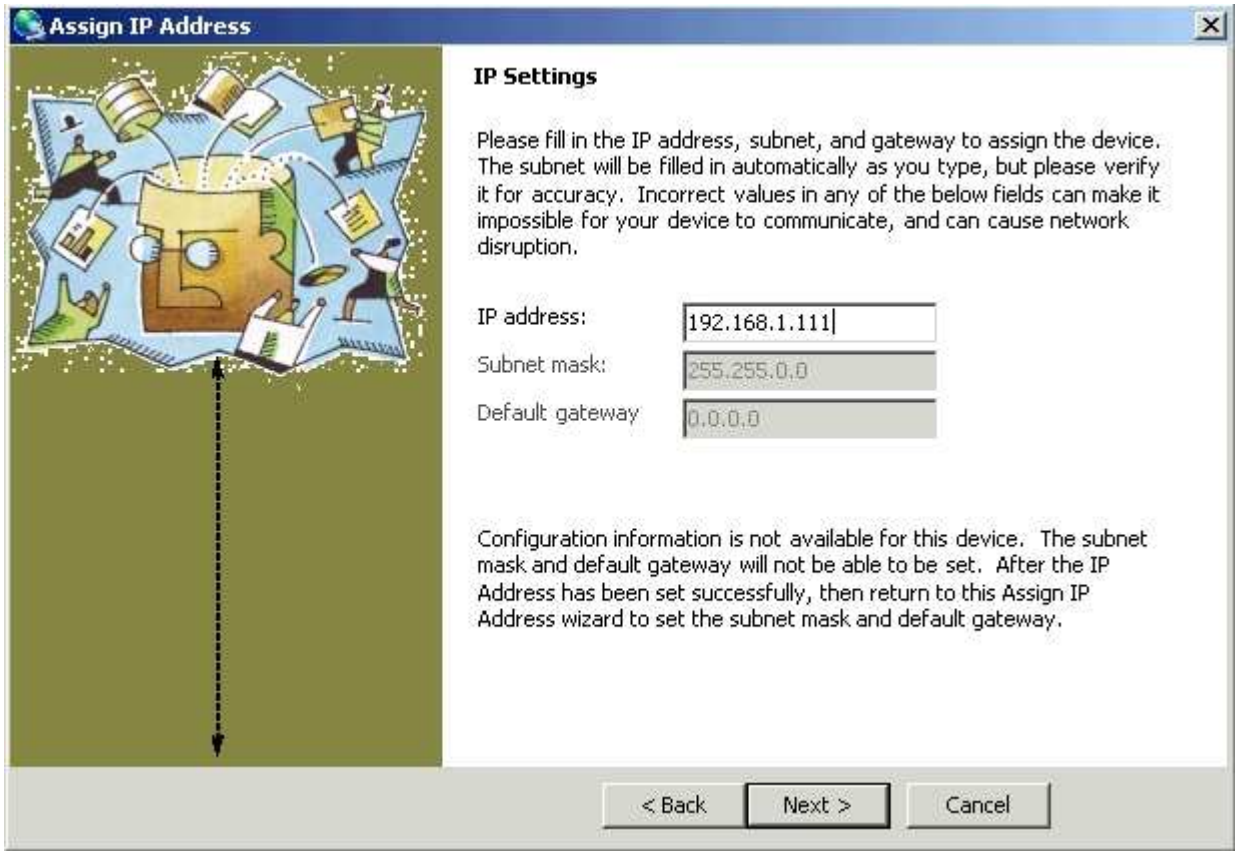


and confirm with

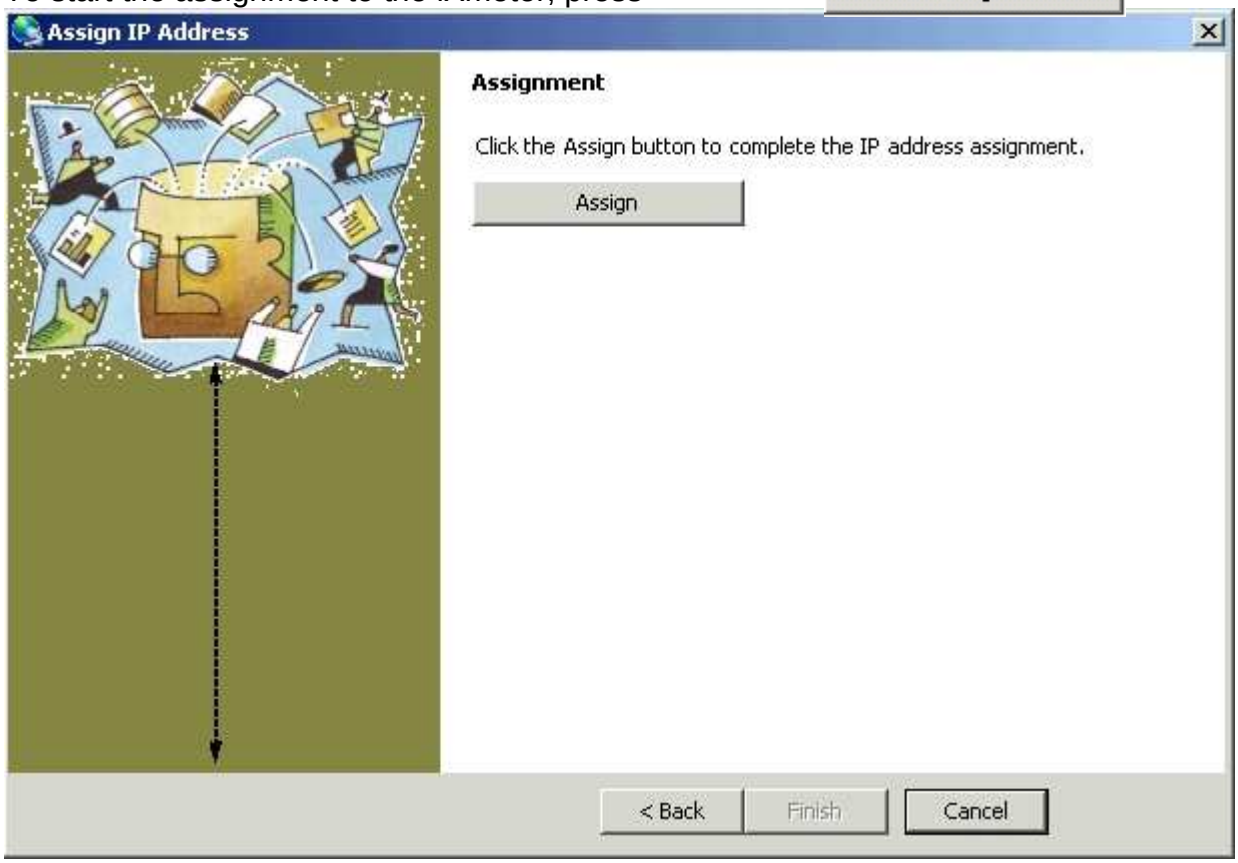



Assign IP Address
IP Settings
Please fill in the IP address, subnet, and gateway to assign the device. The subnet will be filled in automatically as you type, but please verify it for accuracy. Incorrect values in any of the below fields can make it impossible for your device to communicate, and can cause network disruption.
IP address:
169.254.244.84
Subnet mask:
255.255.0.0
Default gateway
0.0.0.0
Configuration information is not available for this device. The subnet mask and default gateway will not be able to be set. After the IP Address has been set successfully, then return to this Assign IP Address wizard to set the subnet mask and default gateway.
< Back
Next >
Cancel

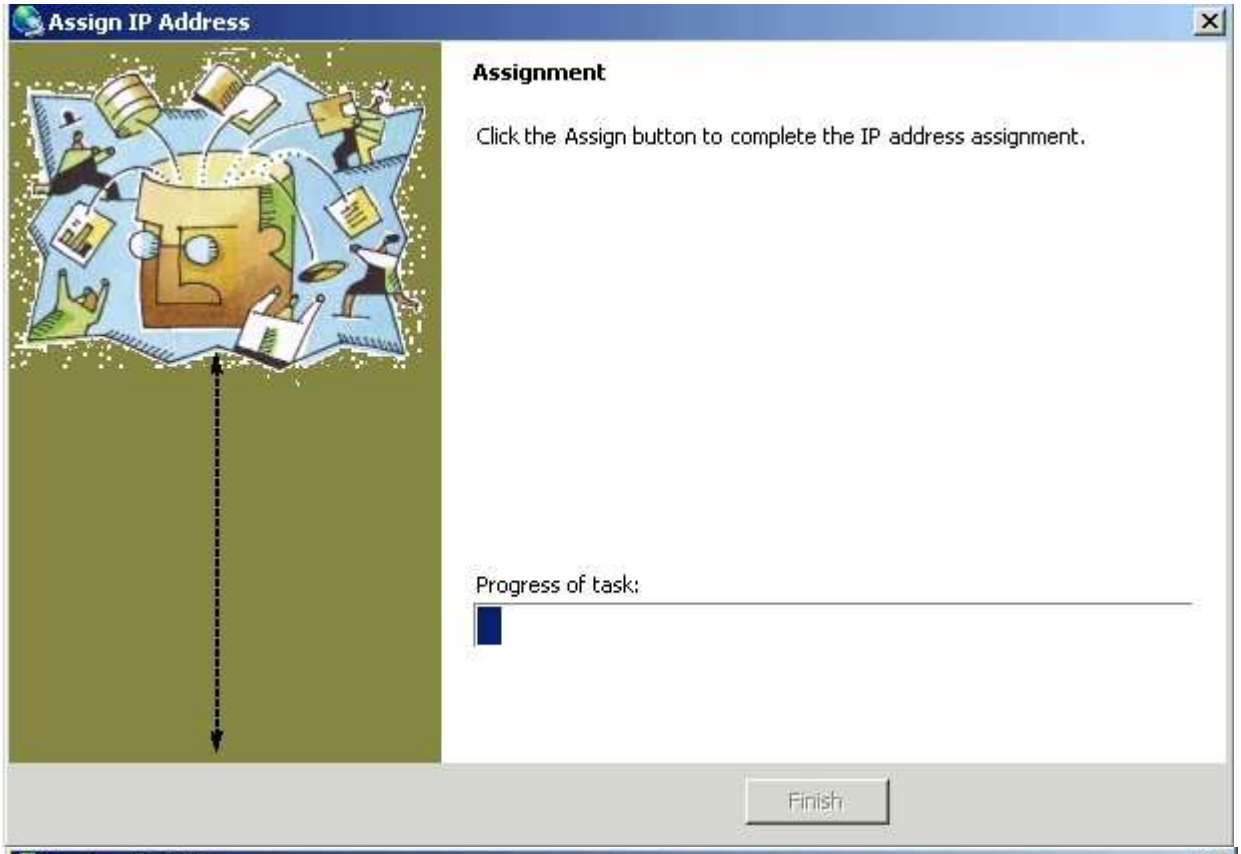
Now enter an IP address assigned by you (e.g. 192.168.1.111).
Confirm with

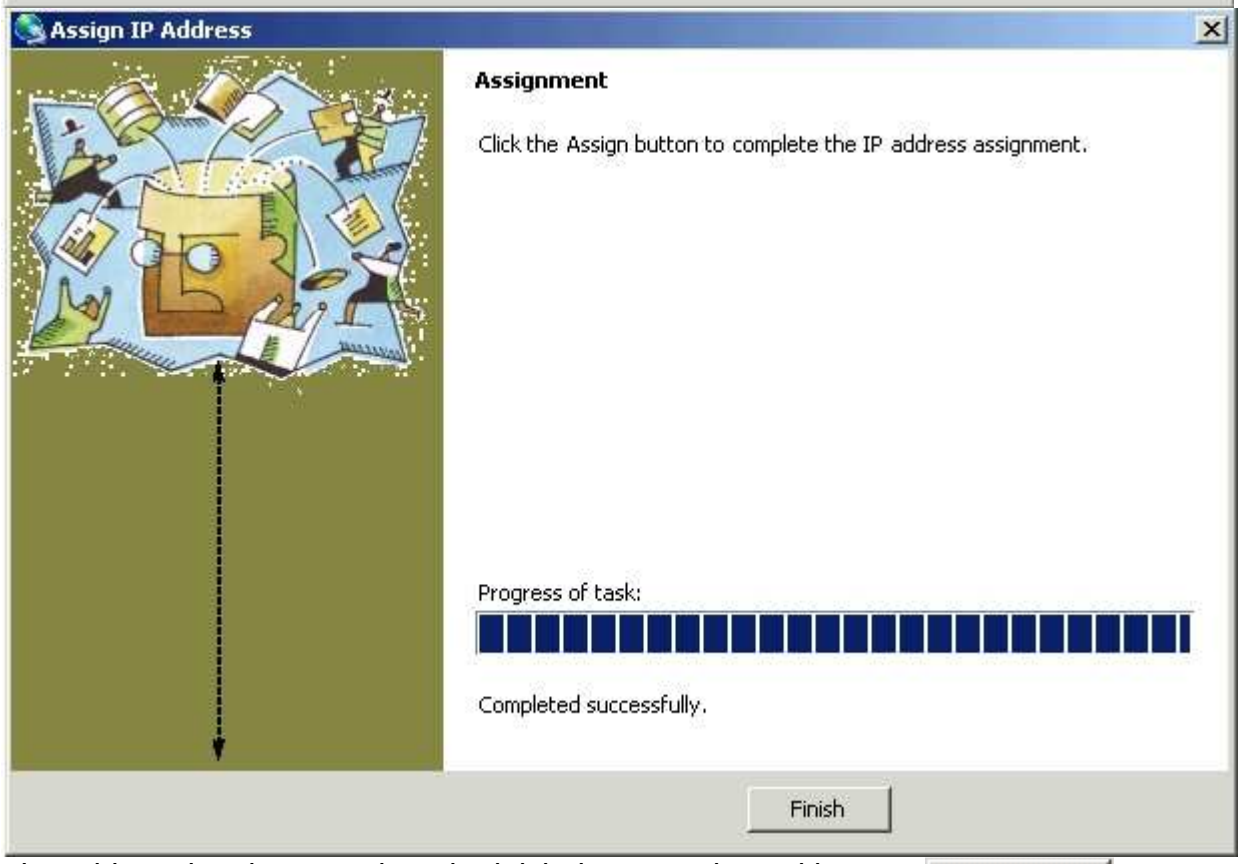

Assign IP Address
IP Settings
Please fill in the IP address, subnet, and gateway to assign the device. The subnet will be filled in automatically as you type, but please verify it for accuracy. Incorrect values in any of the below fields can make it impossible for your device to communicate, and can cause network disruption.
IP address:
192.168.1.111
Subnet mask:
255.255.0.0
Default gateway
0.0.0.0
Configuration information is not available for this device. The subnet mask and default gateway will not be able to be set. After the IP Address has been set successfully, then return to this Assign IP Address wizard to set the subnet mask and default gateway.
< Back
Next >
Cancel

To start the assignment to the iXmeter, press Assign

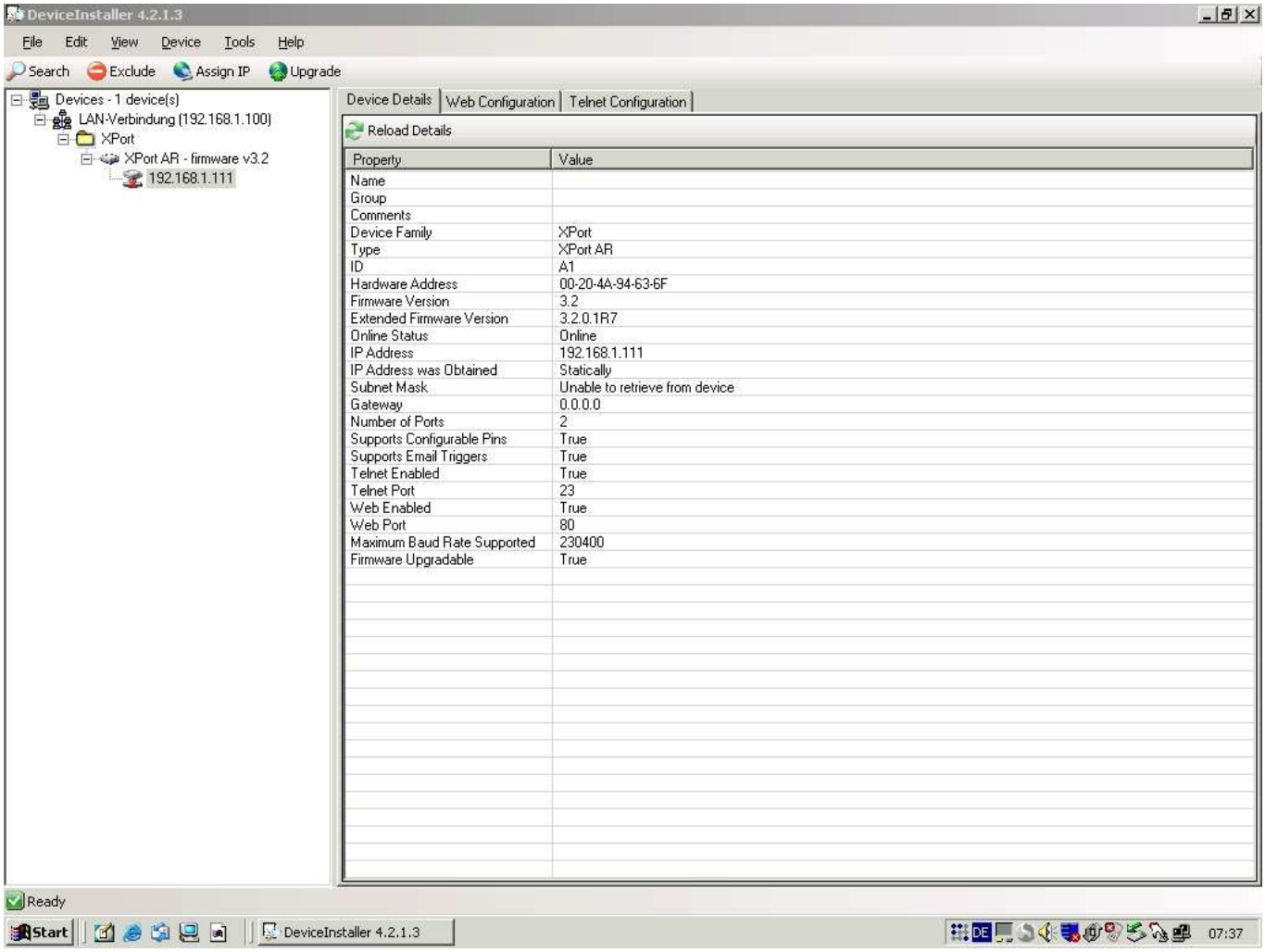


The process is started.





The address has been assigned. Finish the procedure with Finish



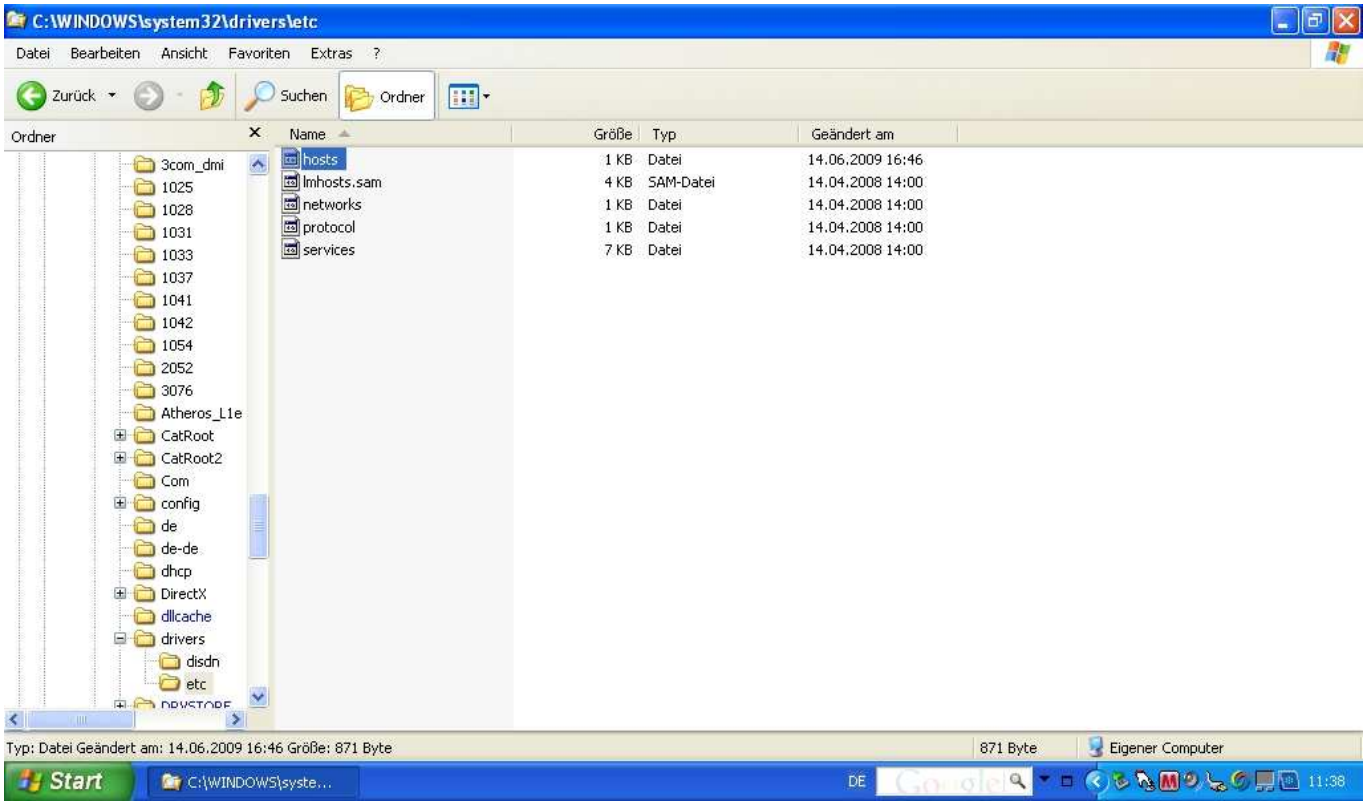
In the overview you see the iXmeter with a new IP address.

Entry in hosts (in case no name server (DNS) is available)

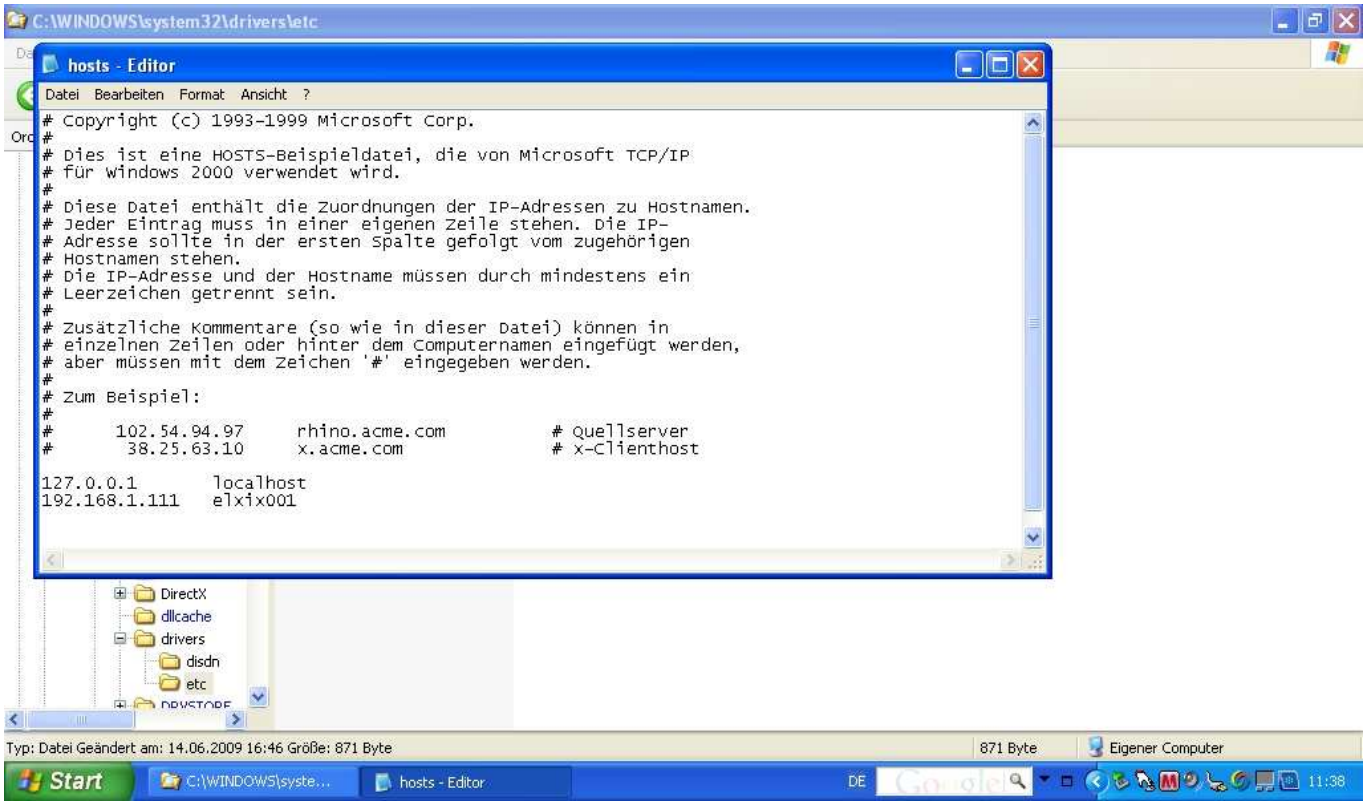
Introduce the iXmeter to your system.
To be able to address it using a name, open the file

“C:\windows\system32\drivers\etc\hosts”

with a text editor.

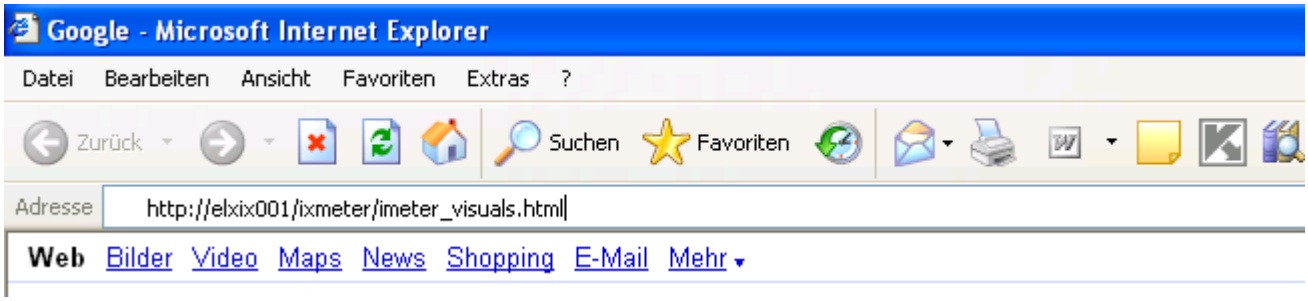


Enter your iXmeter here (e.g. 192.168.1.111 elxix001)
and save the file.


C:\WINDOWS\system32\drivers\etc
hosts - Editor
Datei Bearbeiten Format Ansicht ?
Copyright (c) 1993-1999 Microsoft Corp.
#
Dies ist eine HOSTS-Beispieldatei, die von Microsoft TCP/IP
für Windows 2000 verwendet wird.
#
Diese Datei enthält die Zuordnungen der IP-Adressen zu Hostnamen.
Jeder Eintrag muss in einer eigenen Zeile stehen. Die IP-
Adresse sollte in der ersten Spalte gefolgt vom zugehörigen
Hostnamen stehen.
Die IP-Adresse und der Hostname müssen durch mindestens ein
Leerzeichen getrennt sein.
#
Zusätzliche Kommentare (so wie in dieser Datei) können in
einzelnen Zeilen oder hinter dem Computernamen eingefügt werden,
aber müssen mit dem Zeichen '#' eingegeben werden.
#
Zum Beispiel:
#
102.54.94.97   rhino.acme.com   # Quellserver
38.25.63.10   x.acme.com   # x-Clienthost
127.0.0.1   localhost
192.168.1.111   elxix001
DirectX
dllcache
drivers
disdn
etc
Typ: Datei Geändert am: 14.06.2009 16:46 Größe: 871 Byte
871 Byte
Eigener Computer
Start
C:\WINDOWS\syste...
hosts - Editor
DE
11:38

Now you can address the iXmeter in the Internet Explorer without the IP address.
Try it out right away:

12. Calling up the iXmeter software



Enter the following address:
http://elxix001/ixmeter/imeter_visuals.html

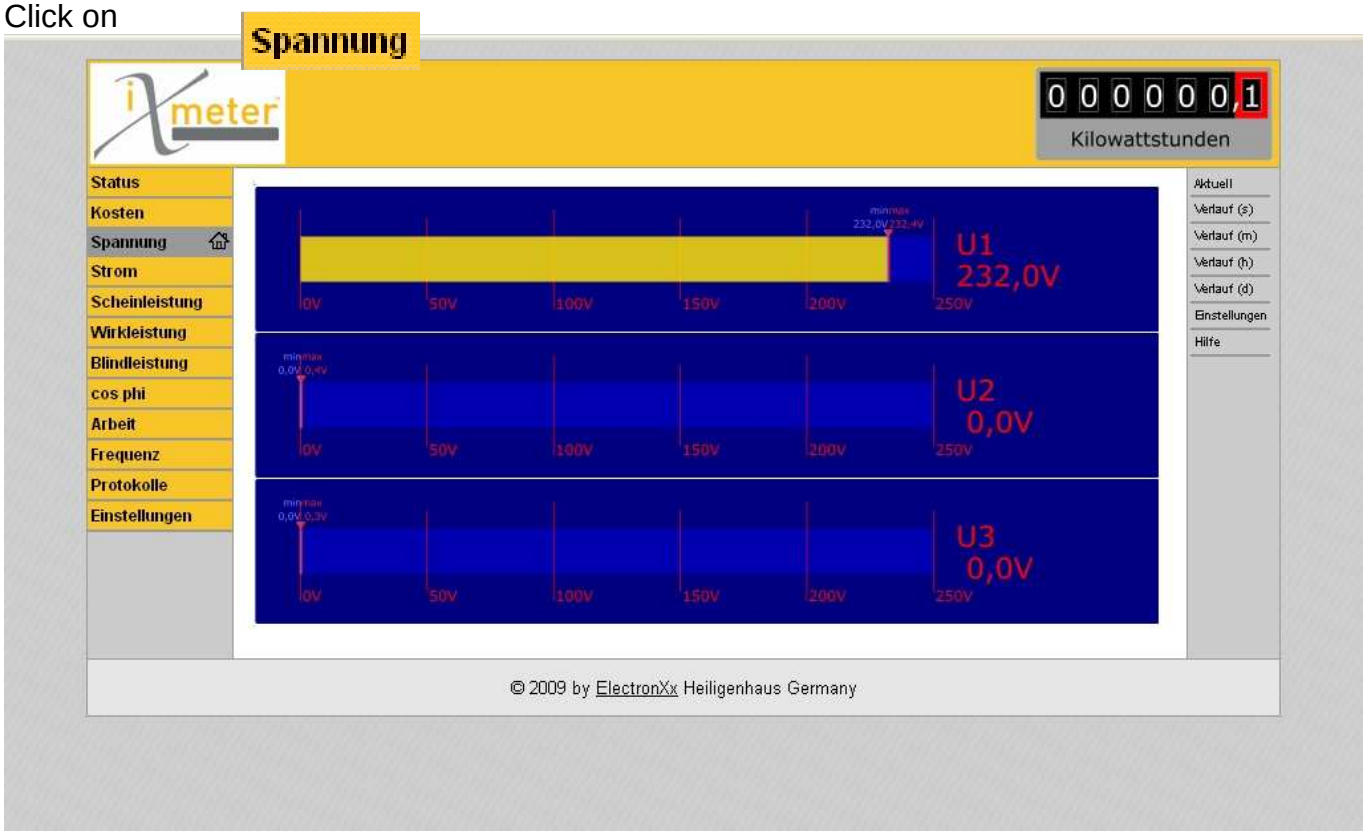
(Alternatively you can also use the IP address:
http://192.168.1.111/ixmeter/imeter_visuals.html
)

Finished! Now you are in the iXmeter display.
The present meter reading is shown in the status display.

Left menu

The different variables are offered in the left menu.

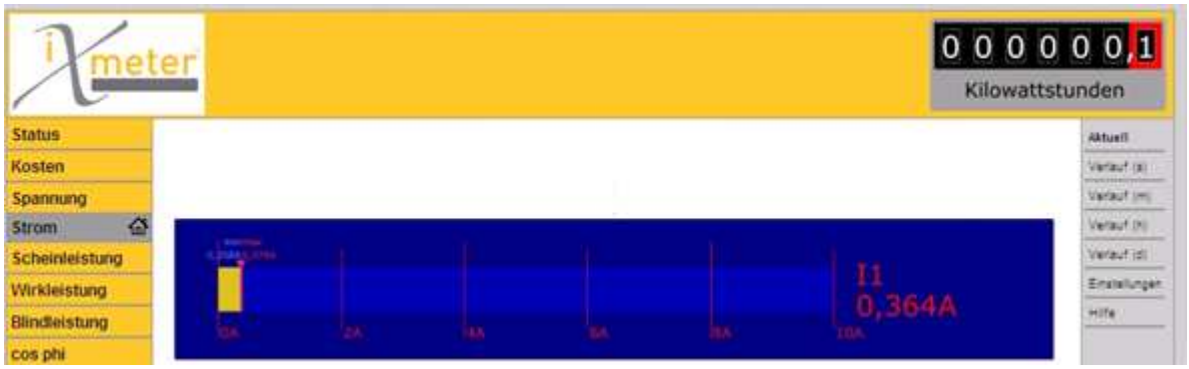
A single click with the mouse enables you to display the selected menu item
Click on



The display now shows the voltage at the moment on the three phases.

Since only voltage U1 is connected here in our sample device, we only see the voltage value for U1 = 232.0 volts.
Voltage U2 and U3 are 0 volts

Select the menu item



Current I1 is displayed at the moment with a value of 0.364 A.

Furthermore, the minimum and maximum measured value is shown by the slave pointer.

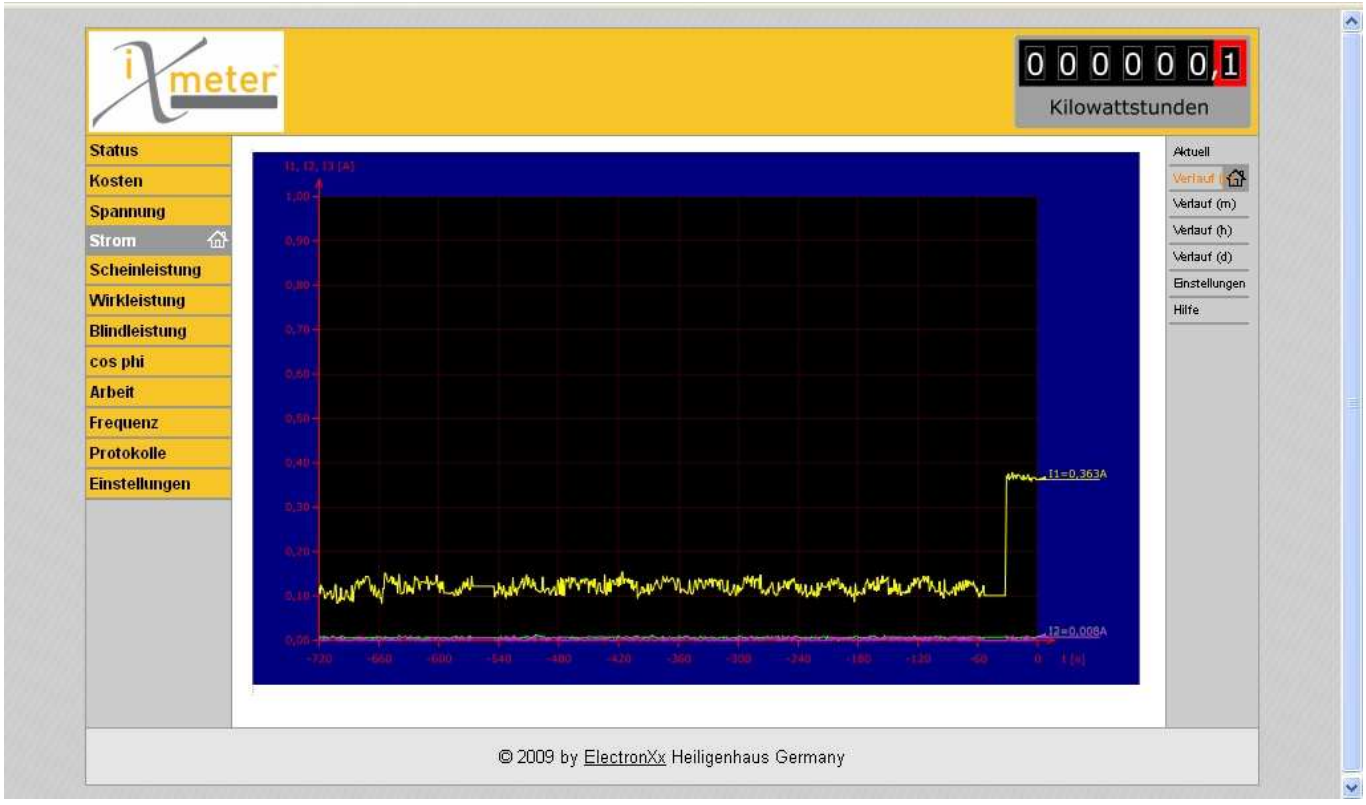
Right-hand menu

Using the right-hand menu, you can choose between the currently measured value and the development over time in seconds, minutes, hours or days

The last 720 measured values are saved.
That means:

- The last currently measured values for 720 seconds
- The last minute mean values for 720 minutes
- The last hour mean values for 720 hours
- The last day mean values for 720 days

Let's change over to development in seconds.



Now we see the development of the current over the last 720 seconds.
This changeover is possible for every measured value.

13. Reading out the measured value tables

http://elxix001/iXmeterAtWork?command=get_seconds&format=float&filetype=html&count=10
http://elxix001/iXmeterAtWork?command=get_seconds&format=raw&filetype=html&count=10

The commands are composed of the following:
Link to the directory:
http://elxix001/iXmeterAtWork

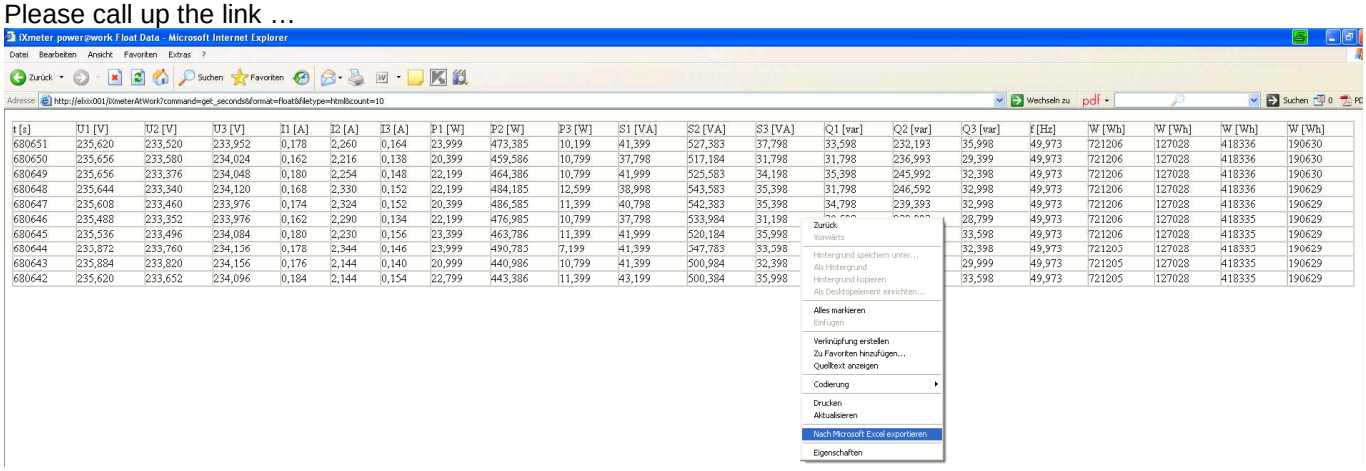
Command:
Command=get_seconds,
Command=get_minutes,
Command=get_hours,
Command=get_days

Format=float (numbers in float format)
Format=raw (raw data integer, standardized)

Filetype=html (table in HTML format

Count=10 (reads 10 data records, max. 720)

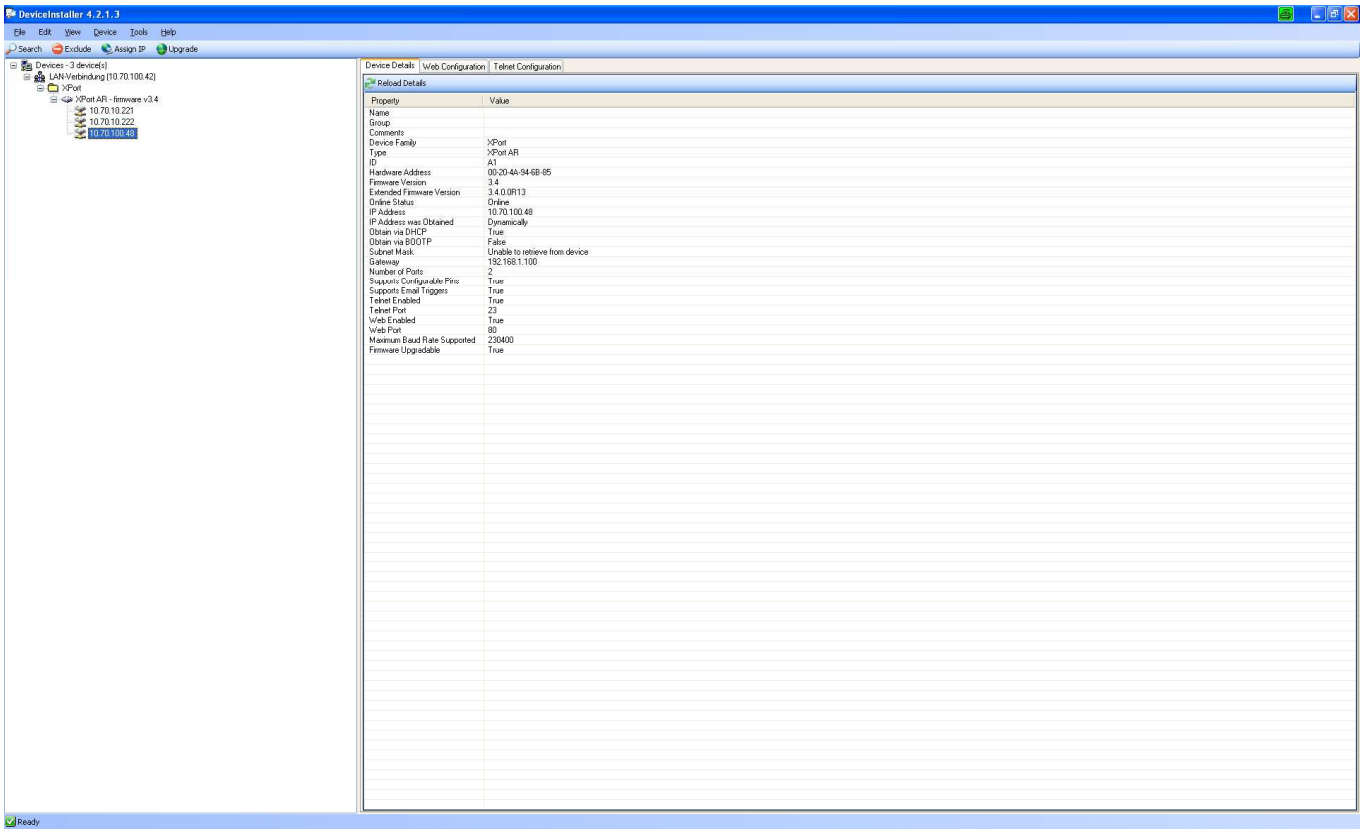
Please call up the link …



The HTML table appears.
By clicking with the right-hand mouse button, you open a submenu.
You can immediately transfer the data to Excel by means of the menu item “export to Excel”.
However, this function is only available in the Microsoft Internet Explorer.

14. Telnet

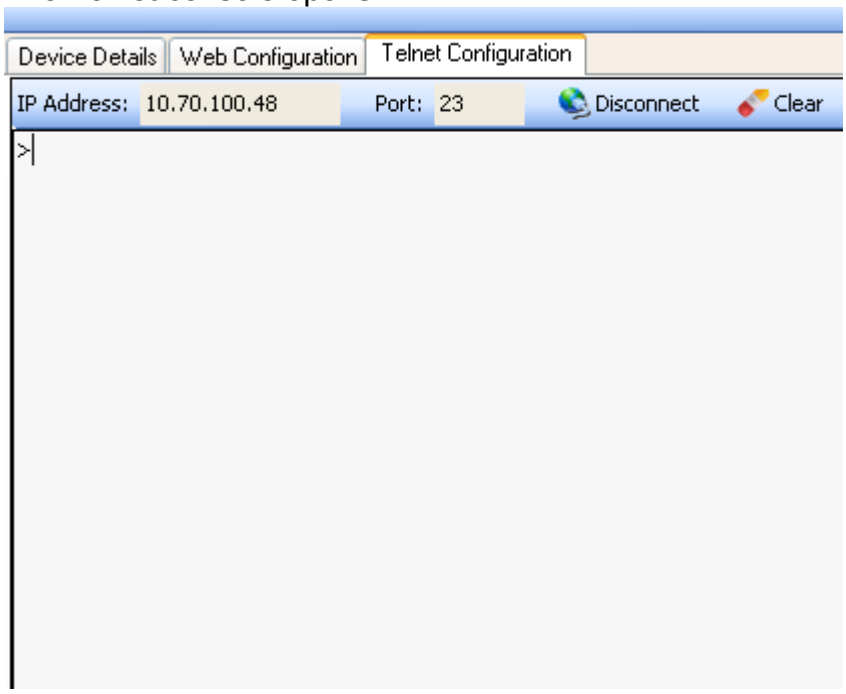
Open the DeviceInstaller
Select the iXmeter and mark it.



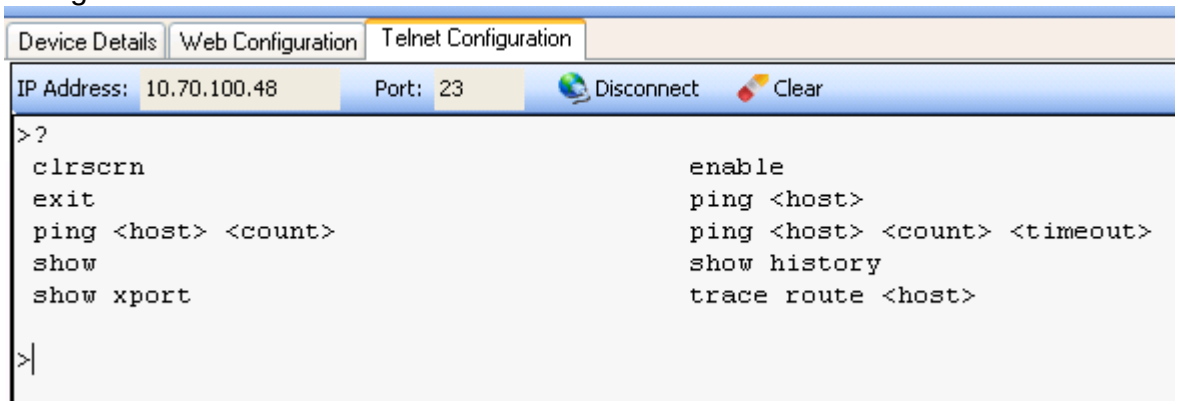
Select the tab

Press the button

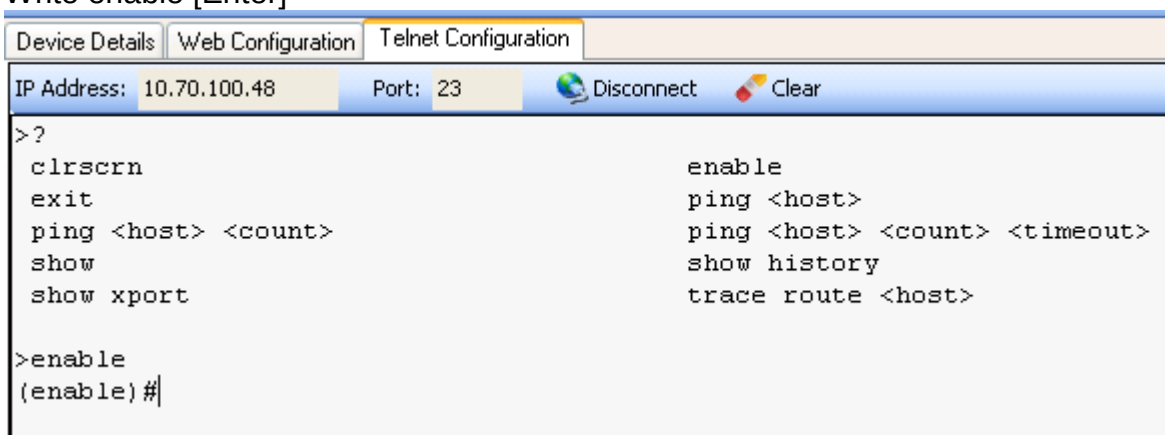
The Telnet console opens



You get an initial functional overview with ?.



Write enable [Enter]



>?

```
>enable
(enable)#?
 auto show interfaces                        auto show processes
 auto show xsr                               chem <number>
 clear interfaces counters                   clear query port counters
 clear xsr counters                          clrscrn
 configure                                   connect
 connect line <line>                         cpm
 device                                      disable
 exit                                        filesystem
 ixmeter                                     kill line <line>
 kill ssh <session>                          kill telnet <session>
 line <line>                                 no clear interfaces counters
 no clear query port counters                no clear xsr counters
 nslookup                                    nslookup <host>
 ping <host>                                 ping <host> <count>
 ping <host> <count> <timeout>               ppp <line>
 reload                                      reload factory defaults
 show                                        show history
 show hosts                                  show interfaces
 show ip sockets                             show processes
 show sessions                               show xport
 show xsr                                    ssh
 ssl                                         trace route <host>
 tunnel <line>                               write
 xcr dump                                    xcr dump <group list>
 xcr export <file>                           xcr export <file> <group list>
 xcr import <file>                           xcr import <file> <group list>
 xcr list                                    xsr dump
 xsr dump <group list>                       xsr export <file>
 xsr export <file> <group list>              xsr list

(enable)#
```

>ixmeter

```
(enable)#ixmeter
(ixmeter)#
```

>?

```
(ixmeter)#?
 auto get inputs                             auto get ratings
 auto sendmodbus <hex-string to send>        auto show
 exit                                        get inputs
 get ratings                                 mode <direction>
 poll inputs <yes or no>                     sendmodbus <hex-string to send>
 sendmodbusmode <raw or addcrc>              show
 translate <string to translate>

(ixmeter)#
```

Now we list the currently measured values:

>get inputs

```
(ixmeter)#get inputs
Ratings updated
U1 [V]     U2 [V]     U3 [V]     I1 [A]     I2 [A]     I3 [A]     P1 [W]     P2 [W]     P3 [W]     S1 [VA]     S2 [VA]     S3 [VA]     Q1 [var]     Q2 [var]     Q3 [var]
f [Hz]
231,048    0,000      0,384      0,000      0,005      0,001      0,059      0,000      0,000      0,000       0,000       0,000       0,000        0,000        0,000
49,993
(ixmeter)#
```

Alternatively you can also use other Telnet consoles as the DeviceInstaller.

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ElectronXx GmbH
Haberstrasse 46
D-42551 Velbert
Germany

Tel.: +49 (0) 2051 60721 0
Fax: +49 (0) 2051 60721 65
e-mail: info@electronxx.de
WEB: www.electronxx.de
www.electronxx-shop.de

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